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# American Aviation

1951

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THE  
INDUSTRY'S  
FIRST  
NEWS  
MAGAZINE

## Riddle of Hong Kong

**HONG KONG**—From all outward appearances the most significant impression a newly arrived visitor gets in this British crown colony is that it is almost abnormally healthy and busy.

The harbor is full. Trading and shipping are going along at a fast pace. The stores are stocked with goods of every conceivable kind from around the world. Food is abundant. Traffic is heavy. The London-type double-deck buses and trams, and the electric ferries that ply between the island and Kowloon on the mainland are full. People are well dressed, everybody is in a hurry. The sidewalks are jammed. Bars, lounges and coffee shops are well patronized. The very latest Hollywood and London movies are being shown. The noise of piledrivers and riveters is heard in the business section on two big new office buildings. There is only a very occasional uniform seen.

The visitor sees very little to remind him of evacuation stories, of the fact that Red China is just 30 miles away, or that Hong Kong isn't going to continue "as is" forever.

In this 900-square-mile area partly owned and partly leased by the British, there are 2,000,000 Chinese. There are about 15,000 Europeans and non-Asiatics. Stationed at various points in the territory are about 40,000 troops but these are not seen in the city areas. The British maintain firm control over law and order, but Hong Kong is almost entirely populated by Chinese. It is no secret that quite a few are Communists or Communist sympathizers. Britain recognizes Communist China so there is a considerable freedom of movement between Hong Kong and China proper.

It is a strange city of paradoxes—yet on the surface no city in the world seems more outwardly unconcerned with a world crisis. It is "business as usual" to the fullest extent that the city's traders and shippers can make it.

Only the Americans have taken evacuation steps although some of the British colony have quietly been moving out precious personal possessions. But the American evacuations were somewhat premature and certainly not on the headlines given to them in the U. S. press. The American moved out three families in a purely

(Turn to Page 3)



## Wins 1950 Sperry Award

Frank N. Piasecki, 31, founder and chairman of the board of Piasecki Helicopter Corp., has been awarded The Lawrence Sperry Award for 1950 "for a notable contribution made by a young man to the advancement of aeronautics." Piasecki, who flew his first helicopter in 1943, pioneered the development of the tandem-rotored helicopter and produced the first transport helicopter of this type to fly successfully. He is president of the American Helicopter Society.

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### a LOOK at the WEEK

Controlled Materials Plan is now slated for July 1. National Production Authority will have by Apr. 15 the steel, copper and aluminum requirements for 1951 third quarter. Manufacturers, incidentally, report materials situation is slowly becoming better.

*Although price freeze doesn't apply to strictly military items, manufacturers want clarification of effect on civil planes, parts.*

Lightplane makers are hoping to get priorities for enough material to build 3,000 planes this year (against 3,386 in 1950). Air Coordinating Committee wants CAA to come up with plan for screening out non-essential users of personal planes.

*Winner of Air Force-Army liaison plane competition won't be announced for about a month. Announcement was originally scheduled for last week but was delayed.*

If traffic situation makes it necessary, airlines will take steps to assure important military passengers of space, i.e., an informal priority system.

*Airline men say heavy traffic coupled with loss of experienced personnel to military is already having adverse effect on passenger service standards, particularly at large stations.*

Air Force and airlines are still trying to work out policy covering deferment of essential workers from reserve call-up. Most critical at present is co-pilot category. Something may be worked out enabling airlines to keep personnel in certain key positions, but you can mark down as certain that there won't be any blanket deferments by categories.

*There's been no change in Pacific airlift—no more airline planes needed.*

Government-industry task groups working on civil aviation mobilization plans have been holding lengthy meetings, and all are expected to make Mar. 15 deadline.

*British are pushing recommendation that passenger seats in all planes carrying more than six people face backward to minimize injuries in accidents. They'll ask International Civil Aviation Organization to consider it next month.*

### Bigger Convairs for UAL, Braniff

New Consolidated Vultee planes ordered by United Air Lines and Braniff Airways are Model 340's, a new version of the Convair-Liner which has 13 ft. 11 in. more wing span and which seats 44 passengers, it is learned.

Comparison of the 340 with the 240 shows:

**Dimensions:** Wing span of 105 ft. 8 in. against 91 ft. 9 in. Fuselage length is 79 ft. 2 in. against 74 ft. 8 in. Tail height is increased from 26 ft. 11 in. to 27 ft. 9 in.

**Weight:** Gross weight is 45,000 lbs. compared with 41,790 lbs., while certificated empty operating weight is 29,372 lbs. including airline type radio and buffet equipment. Maximum payload is 12,012 lbs. and maximum landing weight 44,500 lbs.

**Engines:** Two Pratt & Whitney R-2800 CB-16's compared with CA series of R-2800 in 240's. Fuel capacity is raised from 1,000 gals. to 1,900 gals.

**Speed and Range:** For a 1,000-mile segment (based on 1,200 lbs. fuel reserve and zero wind), the 340 would have 7,700 lbs. payload and cruise at 290 mph. true airspeed at 1,350-hp per engine. At 500 miles range with same reserves and operating at 20,000 ft., payload would be 10,000 lbs. and cruising speed about the same.

**Other Characteristics:** Loading door with built-in steps on left front side of plane; larger tires and longer struts on main landing gears; almost two degrees additional dihedral in wings outboard of the nacelles, and increased propeller ground clearance.

### CAB Policy on Transport Priorities

Civil Aeronautics Board has revealed that by Mar. 15 it will inform Air Coordinating Committee's aircraft claimant division of the overall program of new U. S. airline planes and parts which it intends to support for issuance of materials priorities.

CAB is the claimant agency to which U. S. airlines direct their requests for defense order ratings for planes and parts. Announcing its policy and program, CAB said:

- It will support requests of airlines for DO's for production of all planes which can be economically absorbed in the airline system.
- It will seek from the industry by Mar. 1 the number of new planes which each carrier has ordered or estimates it will order for delivery during fiscal years 1952, 1953 and 1954, in addition to those on order as of Nov. 1, 1950. Industry has been asked to indicate manufacturer, type of plane and date of desired delivery.
- These estimates will be evaluated and if adjustments appear necessary in order to conform with announced policy, CAB will consult with affected airlines prior to making any changes.
- Overall program will go to ACC Mar. 15. At that time, CAB will request DO's as necessary on firm orders for planes included in the program in order to insure production and delivery on desired date. DO's, however, will not be requested unnecessarily far in advance of time needed.
- Program will be reviewed, revised and extended on quarterly basis, by which time additional DO authority will be requested to insure production and delivery in accordance with revised program.

NPA, according to the Board, is expected to author-

ize additional DO's on such program as is approved by NPA on Apr. 1. This program will then be integrated with military production through the Aircraft Resources Production Agency at Wright-Patterson AFB, Dayton, O.

## New Transcontinental Interchange

In an important decision, Civil Aeronautics Board has refused to establish a new southern transcontinental route, but has requested interchanges which it says will accomplish the same purpose.

The decision made it evident that from now on CAB will lean more and more toward interchanges between airlines rather than establishment of new routes.

A Board examiner had recommended that Eastern Air Lines be awarded the southern transcontinental, but CAB, by a 3-1 vote, reversed him, claiming that 90% of EAL's through traffic would be diverted from other carriers.

CAB's decision did the following:

**New Routes:** Denied route applications of EAL, Delta, National, American, Braniff and Continental.

**Delta-American:** Approved Delta-AA interchange between Atlanta and New Orleans on the one hand, and AA's west coast points on the other, via Ft. Worth.

**National-AA-Delta:** Requested filing within 60 days of voluntary interchange agreement by NAL, Delta and AA for service between Miami, Tampa, New Orleans, Dallas and Ft. Worth, on the one hand, and points west of Ft. Worth on AA's route 4.

**Braniff-Continental-AA:** Requested filing of similar agreement within 60 days by Braniff, Continental and AA for service between Houston, San Antonio, El Paso and west coast.

Present Delta-AA interchange for Miami-west coast passengers will continue until CAB completes action on NAL-Delta-AA interchange. Thereafter, latter operation will become the transcontinental, with present Delta-AA cut back to a New Orleans/Atlanta-west coast operation.

Important policy conclusions:

**Competition:** Establishment of competitive service on every segment of domestic system is unnecessary to assure benefits of competition. Civil Aeronautics Act cannot be construed as requiring competition for the sake of having competition.

**Interchanges:** Problem of reconciling any substantial trunkline route expansion with statutory mandate looking toward development of an economically sound air transport system would present a major, if not insurmountable, task, and in such circumstances, consideration should be given to interchanges as an available means for meeting future needs. New interchanges should cause minimum interference with existing route pattern and, therefore, should not be dependent on new route extensions. Interchanges should leave substantially undisturbed the historic participation of existing lines in the traffic served, should not cause undue diversion, and should be provided over a reasonably direct route.

CAB Member Josh Lee dissented from majority's decision, stating that American has "complete domination of the transcontinental air traffic markets in the southeastern portion of the United States." Capt. E. V. Rickenbacker, EAL president, issued a statement calling the decision "amazing in view of the evidence presented" and said he will ask reconsideration.

## MANUFACTURERS

**Buick Builds Sapphire:** Buick Motor Division of General Motors Corp. has confirmed negotiations for a license from Wright Aeronautical Corp. to build Wright's J-65 British-designed Sapphire jet engine. Buick has received Air Force production go-ahead and a facilities contract for \$25,000,000 to prepare for production.

**Republic F-84 Subcontracts:** A \$2,500,000 sub-contract has been awarded by Republic Aviation Corp. to Florence Stove Co., Gardner, Mass., for F-84 ailerons and wing flaps. Republic has also subcontracted with Edo Corp., College Point, L. I., for F-84 fins and rudders.

**Helicopter Firm Moves:** Operations of American Helicopter Co. will be moved by May 1 from Manhattan Beach, Calif., to Falcon Field, Mesa, Ariz. Company is carrying on research on pulse jet helicopters and other types of aircraft and is doing prime contract work for government. Over 200 people will be employed by end of this year, company states.

### Expansion

**Fairchild Engine Division** has leased government-owned plant at Valley Stream, L. I., occupied during last war by Columbia Aircraft Co. It will be used for manufacture of jet engine components and parts and assemblies for an auxiliary aircraft power plant.

**Minneapolis-Honeywell Regulator Co.** will start construction of a new plant to double aeronautical engineering facilities. Occupancy is expected Aug. 1.

**Bendix Radio Division** of Bendix Aviation Corp. has leased 40 acres of land, two hangars and several small buildings at Pimlico Airport, Baltimore, Md., for added production space, and will take occupancy immediately.

**People:** William E. Valk, of Curtiss-Wright Corp., was re-elected president of Manufacturers Aircraft Association, which administers aircraft industry's patent cross-licensing agreement . . . **H. V. Lindbergh**, Kaiser-Frazer Corp.'s manager of styling and design and assistant secretary, has been appointed vice president and liaison official between K-F and Fairchild Engine & Airplane Corp.

## PLANES & EQUIPMENT

**Helicopter Autopilot:** Air Force has tested successfully a new combination autopilot and stabilizing device for helicopters, developed through combined efforts of AF, Navy and Coast Guard. Unit is based upon Minneapolis-Honeywell E-6 automatic pilot and was built to armed forces' design by Goodyear Aircraft Corp., Akron, O.

**202 Modification Board:** CAA has set up a modification board for the Martin 202, similar to the board which in earlier years established modifications which were incorporated in the Douglas DC-6. The board, which includes representatives of CAA, CAB, NWA, and Martin, will review plane's operating and maintenance history to determine if changes in detail design are advisable. Board's activities do not pre-suppose that plane was at fault in recent accidents.

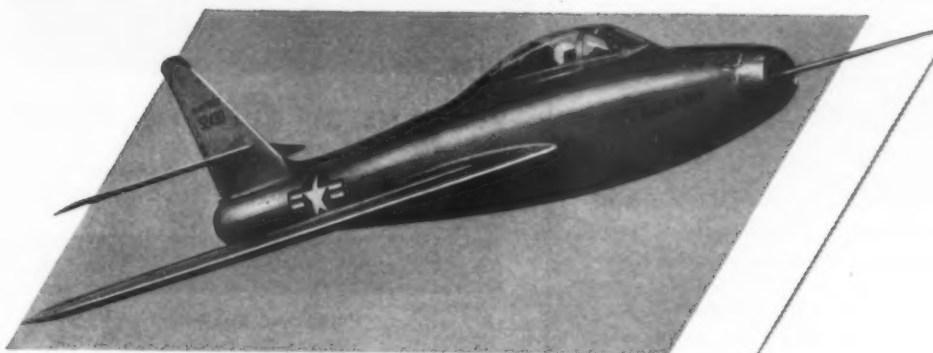
**R-2800's Checked:** Three series of Pratt & Whitney R-2800 engines now in extensive airline use in DC-6 and Convair-Liner will be given periodic power checks to determine whether they are producing rated horsepower, according to a CAA order. Affected are all R-2800's of the -34M1, -83AM3 and -83AM4 series using anti-detonant injection (wet power) for take-off.

**XHSL-1 Helicopter:** First photos released of Bell Aircraft Corp.'s Navy XHSL-1 antisubmarine helicopter show a tandem-rotored craft with rotor mounts on fore and aft extremities. Rotors are two-bladed and foldable. Fuselage is extended and rests on quadricycle landing gear. Horizontal stabilizer with three vertical fins is located at rear of fuselage beneath rotor.

**X-2 Progress:** Air Force's special research plane, Bell X-2, is now virtually complete except for power plant, and is undergoing structure tests. Curtiss-Wright rocket engine is still not available.

(Continued opposite page 50)

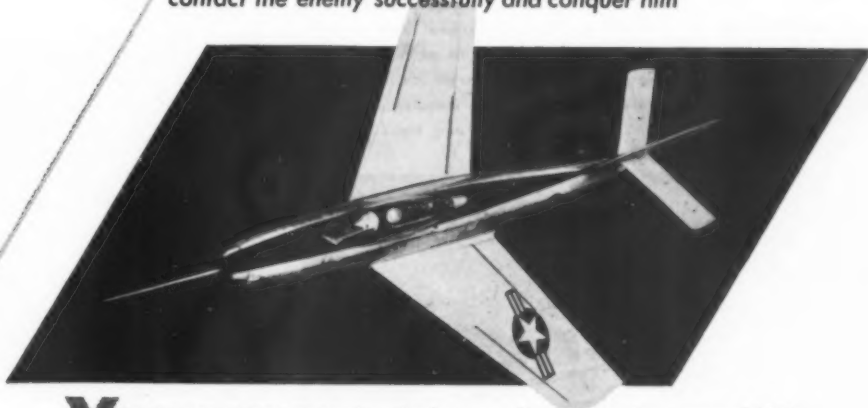
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## News In Pictures



**New Props**—The USAF Fairchild C-119 Packet in which the Aeroproducts Division of General Motors conducted flight tests of the Model A644FN-C1 propeller. Program resulted in a production order of the Aeroproducts propellers for use in late model C-119's. To handle this new demand, coupled with requirements for turboprop-engine propellers, the company is adding some 250,000 square feet plant space and will boost employment from about 1,600 to 4,000.



**Douglas Delta**—The Douglas XF4D-1, which recently made its initial flight, is powered by a Westinghouse XJ-40 jet of 7,500 lbs. thrust. The elliptical form of delta wing is a return to the earliest German conception of this planform. This is the first wing-fuselage combination aircraft designed as a fighter. Cockpit assembly resembles that on the Douglas A2D. The high aspect ratio vertical surface is a new trend.



**Business Plane**—Beechcraft Model C35 Bonanza, now being delivered to distributors, is Beech Aircraft's new bid for the business and executive plane market. Plane's new features and improvements have attracted wide attention, and backlog of firm orders now totals approximately 100 planes, all scheduled for spring delivery. Beechcraft production lines can turn out the new Bonanzas at rate of 11 planes a week.

## American Aviation

THE AIR INDUSTRY'S  
FIRST NEWS MAGAZINE

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precautionary move. The Chase Bank is closing, and American Express is closing up its banking department, solely because the U. S. embargo has dried up their respective businesses.

Yet below the surface, despite the protestations of optimism by the British that nothing is going to happen to Hong Kong for "an indefinite period," there is an undercurrent of concern. Inevitably Hong Kong is part and parcel of Red China's plans of expansion and domination of Southeast Asia. When it wants or needs Hong Kong, whether that be soon or far away, it can take it, assuming that the Communists continue to dominate China itself.

Militarily, the British are prepared to make a stab at defending Hong Kong in the event of armed attack. But it would be a limited defense if the Communists went all out. At the moment there is no concentration of Communists anywhere near Hong Kong, all of the Northern troops having been returned north to fight in Korea.

The real significance of the future of Hong Kong is not military. With a ratio of 33 Chinese to every one European, the colony could be made untenable without firing a shot.

Unless a world war breaks out, or unless the Chinese find themselves in need of taking over control for purposes of saving face, Hong Kong would seem to have an indefinite life ahead. As the only open port, it is serving a useful purpose to China. There is still a very large amount of trade going on. It would be a disadvantage to the Chinese to close up Hong Kong.

Yet the U.S. embargo on trade is beginning to hurt. Add to this the paradox of Britain enforcing an embargo on oil to China, sending troops to fight with the U.N. in Korea, and still maintaining trade in all non-war items with all parts of China. Freight trains leaving Kowloon in Hong Kong harbor roll on into China. So far only the passengers have been discommoded to the extent that they have to change trains and walk across the border.

There is little unanimity of opinion among businessmen and others about the future. Opinions are a dime a dozen. But there is one subject on which one finds wide agreement—the Communists have brought a large measure of law and order to China which did not exist under the Nationalists. There is a very strong feeling that reports from the Nationalists of potent guerilla movements in China are pure figments of the imagination. There are bandit groups, as always, but they are disorganized, isolated and non-political in nature.

It is generally believed, too, that the Communists have made relatively little headway in their ideological conquest of the southern half of China. But they have made headway with the younger generation and if the Communists dominate China for ten years or more, they will have achieved their purposes. So far the Chinese, most of whom are commercial traders and agrarians, have been permitted to go about their business as usual, but without the graft and corruption that permeated the Nationalists.

As for the possibility of an invasion of the mainland by the Nationalists from Formosa, there is a wide feeling that this *could* succeed, given tre-

mendous support, but that it is a gamble for the most part. There is no guarantee that the Nationalist troops would not dissolve and hike out to their homes the minute they reached the mainland. At best such a move, if successful, would probably succeed in dividing China at the Yangtze River, leaving the industrial north to the Communists.

To the British, who have made Hong Kong one of the world's greatest and finest ports for shipping and trade, it seems perfectly logical and natural to continue to hold on to that business. Old China hands consider the Red Chinese to be just another change in control among the great many in the centuries of Chinese history. They may be right. America may be too trigger-happy. Yet an American considers the China situation to be part and parcel of the world struggle led and inspired by Moscow. The recent conflicts between the U.S. and the United Kingdom can find no greater focal point than in Hong Kong today.

At Kai Tek Airport in Hong Kong the Communist flag flies over the barracks of 250 Red mechanics who are guarding and helping to maintain the 70 Convair, C-47 and C-46 transports claimed by Claire Chennault and by the Reds. The litigation continues but the chances are that they will never be in flyable condition by the time the litigation is settled. These are the planes formerly owned by China National Aviation Corp. and Central Air Transport Corp. and there they sit, unused, some damaged by sabotage, on an airport in British-owned Hong Kong used by 12 international airlines.

So Hong Kong continues to hustle and bustle, trying its best to avoid thinking of an ultimate climax to its anomalous position. It is a bargain-hunter's paradise. The neon signs in Chinese lettering glitter at night alongside the Coca Cola and other signs. Fashionably dressed Chinese women with rich brocade and intriguing split skirts crowd the streets with European brokers, traders, shippers, and merchants. Hong Kong in itself is not a major issue in the Far East, as yet, but its destiny is closely linked with more far-reaching events. It is, without the slightest doubt, one of the most fascinating spots on the globe today.

WAYNE W. PARRISH.

## Air Safety

Several comments on air safety made during the annual meeting of the Institute of the Aeronautical Sciences in New York bear repeating:

"The aviation industry has learned that accidents in scheduled transportation can be eliminated. This is not idle speculation. It is supported by trends . . . Today there can be no excuse for ignorance of the safety problem; we know too much about it . . . C. M. Christenson, flight safety engineer with United Air Lines.

"The commonly used yardsticks, therefore, do not give a complete picture because they do not take into account deaths of others who are not passengers and because they neglect injuries to passengers and non-passengers alike . . . We have the facts on total deaths due to different means of transportation; but the public just isn't aware of them . . . it is high time that newspapers, magazines, educators and administrators talked about the overall safety of planes vs. trains and automobiles. The least they could do is to talk about overall and passenger safety . . . Rudolf Modley, Executive Research, Inc., and consultant with the Aircraft Industries Association.

# BOEDY'S ALBUM



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Chicago & Southern Air Lines  
St. Louis, Missouri  
June 14, 1939



**Erma Murray**  
Chicago & Southern Air Lines  
St. Louis, Missouri  
June 14, 1939



**M. T. "Jimmie" Benedict (QB)**  
Chicago & Southern Air Lines  
St. Louis, Missouri  
June 14, 1939



**E. M. "Ed" Scattergood (QB)**  
Pennsylvania National Guard  
at St. Louis, Missouri  
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**Edwin B. Meissner, Jr.**  
St. Louis Aircraft Corp.  
St. Louis, Missouri  
June 15, 1939



**C. K. "Charlie" Morton**  
Curtiss-Wright Corp.  
St. Louis, Missouri  
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**Jay L. Taylor**  
Halliburton Cementing  
St. Louis-Wichita  
June 15, 1939



**Geraldine L. Marvin**  
Transcontinental & Western Air  
St. Louis-Kansas City  
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**Evan Lewis**  
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St. Louis-Kansas City  
June 15, 1939



**G. B. "Bennie" Walker**  
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**Nellie H. Granger**  
Transcontinental & Western Air  
Kansas City-Wichita  
June 15, 1939



**Katherine Wilson**  
Transcontinental & Western Air  
Kansas City-Wichita  
June 15, 1939



**G. B. "Cal" Callan (QB)**  
Butler Company  
at Wichita, Kansas  
June 15, 1939



**M. A. "Chet" Chester**  
Beech Aircraft Corp.  
Wichita, Kansas  
June 16, 1939



**M. Louise Baughman**  
Beech Aircraft Corp.  
Wichita, Kansas  
June 16, 1939



**Charles Toth (QB)**  
Army Air Corps Insp.  
at Beech Aircraft, Wichita  
June 16, 1939

# BOEDY'S ALBUM



**E. S. "Eddie" Taylor**  
Mass. Inst. of Technology  
at Wright Aero Corp.  
Paterson, N. J. 6/19/39



**Hays R. Browning**  
at Wright Aeronautical  
Paterson, N. J.  
June 20, 1939



**J. P. "Pete" Hellebrand (QB)**  
N. Y. Police Dept. Aviation  
at WAC, Paterson, N. J.  
June 20, 1939



**G. J. "Jerry" Crossan**  
N. Y. Police Dept. Aviation  
at Paterson, N. J.  
June 20, 1939



**Helen L. Gray**  
Wright Aeronautical Corp.  
Paterson, N. J.  
June 21, 1939



**Harold E. Webb**  
Vega Airplane Co.  
at Paterson, N. J.  
June 21, 1939



**Leonard M. Rohrbough**  
U. S. Army Air Corps  
at Paterson, N. J.  
June 22, 1939



**J. F. "Jake" Miller**  
Hartford Machine Screw  
at Paterson, N. J.  
June 23, 1939



**R. K. "Dick" Beech**  
Beech Aircraft Corp.  
Wichita, Kansas  
June 16, 1939



**L. G. "Lew" Sinning**  
Stearman Aircraft  
Wichita, Kansas  
June 16, 1939



**A. D. "Al" Heath**  
Transcontinental & Western Air  
Wichita-Kansas City  
June 16, 1939



**H. A. "Buzz" Hirshfield**  
Jacobson Flying Service  
Kansas City, Missouri  
June 16, 1939



**Marguerite Hugo**  
Transcontinental & Western Air  
Kansas City, Mo.  
June 17, 1939



**Jo E. Sutherland**  
Transcontinental & Western Air  
Kansas City-Newark  
June 17, 1939



**W. M. "Bill" Campbell (QB)**  
Transcontinental & Western Air  
Kansas City-Chicago-Newark  
June 17, 1939



**T. J. "Tom" Gaughen**  
Transcontinental & Western Air  
Kansas City-Newark  
June 17, 1939



# The Birdmen's Perch

**We've got our candidate for World's No. 1 Optimist!**

He's the guy who figures his plane's electrical system will take care of itself. Yes sir—that joker will spend all day Saturday polishing up his paint job, but forget all about the fine-gauge wires that carry the juice from the battery or generator!



True, exposed wiring is usually insulated and fairly durable, but it won't last forever. Wiring, the best you can get, does break and does short! Beyond the usual dangers of fire from a short circuit, a broken wire can kill your prop deader than a herring!

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A shiny ship is one thing—but remem-

ber, a broken wire can turn it into nothing more than a shiny pile of junk! Check every inch of electrical wiring on your ship regularly!

## P-S-S-T, FERDIE, THE SCRIPT!

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Then, Boys and Girls, those engines need Gulfpride



Aviation Oil—Series D—and no mistake! It's the finest detergent dispersant oil for horizontally opposed engines there is!

To wit, Gulfpride Aviation Oil—Series D—is the only aviation oil put through Gulf's exclusive Alchlor process to remove extra carbon and sludge formers!

Get hep and get engine-happy! Use Gulfpride Aviation Oil—Series D—exclusively and increase those periods between overhauls up to 100%.



**AT LOW ALTITUDES, WATCH OUT FOR STRUNG WIRES, OR ...**



**YOU MIGHT BECOME AMMUNITION FOR A SLINGSHOT, AND...**



**WASTE A TANKFUL OF THAT SUPERTERRIFIC GULF AVIATION GASOLINE!**

Gulf Oil Corporation . . . Gulf Refining Company

# B.F. Goodrich



## 60-inch bag holds 12-man boat, unzips itself in seconds

**T**HE COAST GUARD and B.F. Goodrich have solved a difficult rubber raft problem. An inflatable boat that accommodates 25 men—12 in the boat, 13 alongside—can be rolled into a compact bundle, only 60 inches long.

Trouble was that the boats were being splashed with sea water and oil, and a storage case that could be opened instantly in emergencies wouldn't seal out these elements. The builders of the case had heard of the B. F. Goodrich pressure sealing zipper, thought it might

be the answer. It was, so far as sealing the case was concerned.

In addition, B. F. Goodrich engineers have developed a seal for the end of the zipper and a lock that can be opened instantly. A half turn and a yank, and not only does the zipper unlock, but a carbon dioxide bottle inside the case is released, providing the pressure that zips open the case.

The storage case problem has been solved with a unit that assures dependability after long storage. Provides a

water-tight seal in the stormiest seas. And speeds up the launching and inflating job. In tests, the whole launching operation can be handled by one man.

If you have a problem that rubber or flexible materials might solve, B. F. Goodrich engineers may already have the answer. Check with *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

**B.F. Goodrich**  
FIRST IN RUBBER

AMERICAN AVIATION



# Engine Bottleneck...

## First Job for Licensee Plants

By JAMES J. HAGGERTY, JR.

**T**HE automobile industry continues to move into the aircraft industry, but the early pattern, wherein car builders were assigned airframe production, has now shifted and practically all the licenses now being let are designed to break the biggest expansion bottleneck—aircraft engines.

The engine bottleneck arises from the fact that even before the present military expansion programs got under way, engines, particularly those in the high power categories, were "tight items." But when plane orders started flowing at a rate undreamed of before Korea, the engine production problem became really critical, for not only must a plane have its initial engines installed but it must also have the first year's spares available when it is delivered to an operational unit, or very shortly thereafter.

As a rule of thumb, the military considers that a plane should have one and-a-half spare engines on hand for the first year's operation for each engine installed. Thus a plane like the Air Force's Convair B-36, which is powered by 10 engines (four jet and six piston), will need 25 engines for initial installation and the first year's operation. It can readily be seen what demands the current airframe expansion is making upon the engine industry.

Of the five major engine companies—Pratt & Whitney, Wright Aero-

nautical, General Electric, Westinghouse and Allison—three have already initiated large-scale licensing plans and have others under consideration. Westinghouse and Allison have made no mention of licenses, but have started expanding their own facilities. It would seem, however, that they will need additional help.

Pratt & Whitney, Wright, and General Electric have not only started large expansion programs of their own but have also called on auto manufacturers for help. Pratt & Whitney's R-4360 Wasp Major piston engine and J-48 jet engine are two of the most important engines in the expansion program.

### Sapphire Included

Wright's new J-65 Sapphire, a 7,200-pound-thrust jet engine obtained from the British Armstrong Siddeley Motors Ltd. under a license agreement, will figure prominently in the aircraft program, while the demand for Wright's own R-3350 piston engine has recently been greatly increased.

There is such a tremendous demand for General Electric's J-47 jet that even large expansion of GE's two J-47 plants cannot match production requirements. Here's how the licensing programs of the latter three companies shape up:

- **Pratt & Whitney** has licensed: Ford Motor Co. to build the R-4360

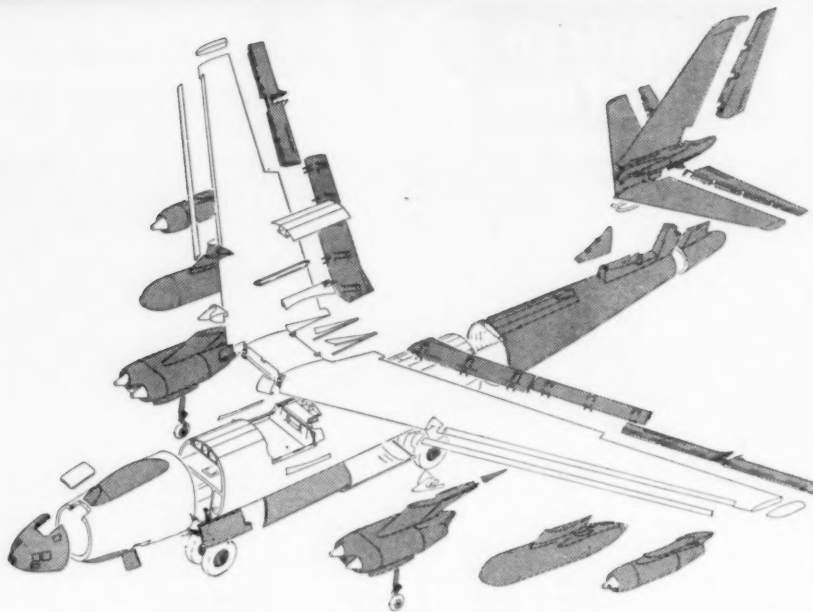
piston engine, used in most of the USAF's large transports and in the Convair B-36 bomber. Ford will build the engines in the former Dodge plant at Chicago.

- **Chrysler Corp.** to build the J-47 jet engine, which powers both Air Force and Navy fighters, chiefly the Grumman F9F Panther, a carrier-based jet. Chrysler will build a new plant in the Detroit area for J-48 production.

- **Wright Aeronautical** has licensed: Hudson Motor Car Co. to build the R-3350 piston engine at an unspecified location. Orders for the R-3350 skyrocketed recently due to a military policy to substitute it for the Pratt & Whitney R-4360 wherever possible in order to reduce the production strain on the R-4360. The engines are in a comparable power bracket. The Fairchild C-119 Packet, a key plane in the Air Force's procurement program, will be the first to use the R-3350 as a substitute.

- **Kaiser-Frazer Corp.** to build the Wright Cyclone 7, a light-horsepower engine used in the Air Force's North American T-28 basic trainer. K-F will handle the production at its Engine Division plant in Detroit, formerly used by Continental Motors Corp. to turn out engines for Kaiser cars.

- **Lycoming-Spencer Division** of Avco Manufacturing Corp. to build three models of the Wright Cyclone



**Subcontractor's Share**—This exploded view of a Boeing B-47 illustrates the amount of work which is subcontracted on a modern military plane. The shaded areas are the plane parts subcontracted, about 40% of the total airframe cost. This work, plus outside purchases of parts and materials, makes a total of 67.4% of the plane which is built by companies other than the prime contractor, Boeing Airplane Co.

9, used in such planes as the USAF's Grumman SA-16 rescue amphibian and Piasecki Helicopter Corp.'s new H-21 helicopter. Lycoming-Spencer will move into the former Chance Vought Aircraft plant at Stratford, Conn., to set up the Cyclone 9 line.

• **General Electric** has licensed:

**Packard Motor Co.** to build the J-47 jet, used in a number of high production USAF planes, at Packard's Detroit plant.

**More Deals Coming**

Those are the deals which have been "firmed up" to date, but there are a number of others forthcoming.

**Buick Division of General Motors Corp.** will probably help Wright build the J-55 Sapphire. Buick also had a mobilization planning contract for Pratt & Whitney's R-4360 engine and this, too, may be implemented later.

**Nash Motors** may take over production of Pratt & Whitney's R-2800 piston engine.

**Studebaker Corp.** will get into the jet engine program with a license to build General Electric's J-47.

**Chevrolet Division of General Motors Corp.** will build a jet engine type as yet undetermined. The Air Force has assigned Chevrolet a jet engine plant at Tonawanda, N. Y., and will designate the engine type to be built later.

**Kaiser-Frazer Corp.** may build one of Pratt & Whitney's light-horsepower engines, possibly in the same plant where it will turn out Wright Cyclone 7's.

**Continental Motors Corp.** is an

alternate to Kaiser-Frazer on Pratt & Whitney light-engine production.

**Jacobs Aircraft Engine Co.** is in line for Pratt & Whitney's smallest engine, the 450-horsepower R-985 piston engine.

As stated earlier, the trend lately has been to bring auto and other non-aviation manufacturers into the engine industry rather than the airframe industry. This does not mean, however, that the last of the mobilization airframe contracts to companies other than established airframe manufacturers has been let. There will be more, but the services will probably proceed with caution in that direction after the fracas the Air Force's early blundering aroused. As it now stands, Kaiser-Frazer Corp. will build Fairchild C-119 Packets at K-F's Willow Run plant and General Motors will build Republic F-84F jet fighters at the Buick-Oldsmobile-Pontiac assembly plant in Kansas City, Kans.

Non-aviation companies are also getting subcontract work in the airframe and engine component field. Among those now in negotiation are:

**Kaiser-Frazer Corp.** to build fuselage waist sections and center section flaps for Lockheed Navy P2V anti-submarine patrol bombers. Kaiser will do the work at its Aircraft Division plant in Oakland, Calif.

**Nash-Kelvinator** to build undisclosed plane parts, possibly propellers under license to Hamilton Standard Division of United Aircraft Corp.

**Crosley Division of Avco Manu-**

**facturing Corp.** to build airframe sections for an undisclosed prime contractor.

**Hotpoint, Inc.,** electrical appliance manufacturer, to build a number of major components for the Pratt & Whitney J-48 jet engine at Chicago, Ill., and also to turn out superchargers for General Electric at the former Allis-Chalmers plant in West Allis, Wisc.

**Aviation Calendar**

**Feb. 19-20**—Third annual national agricultural aviation conference, Memphis, Tenn.

**Feb. 23**—Air Transport Command Officer-Stag Reunion, Waldorf Astoria Hotel, New York, N. Y.

**Feb. 24**—Fourth Annual National Model Plane Exhibit Contest, Higbee Co. Auditorium, Cleveland, Ohio.

**Feb. 27**—Savannah Aviation Clinic, Hotel De Soto, Savannah, Ga.

**March 12-13**—Third annual short course on uses of aerial equipment in agriculture, Purdue University, West Lafayette, Ind.

**March 15-17**—19th Annual Meeting of American Society of Tool Engineers, Hotel New Yorker, New York, N. Y.

**March 16**—Institute of the Aeronautical Sciences sixth annual flight propulsion meeting, Hotel Carter, Cleveland, Ohio.

**March 19-22**—Institute of Radio Engineers National Convention, Waldorf Astoria Hotel, New York, N. Y.

**April 4-6**—CAA Airports Advisory Committee meeting, Du Pont Hotel, Wilmington, Del.

**April 16-18**—Society of Automotive Engineers aeronautic meeting and aircraft engineering display, Hotel Statler, New York, N. Y.

**April 19-21**—Airport Operators Council annual meeting, Hotel Peabody, Memphis, Tenn.

**April 23-26**—American Association of Airport Executives annual meeting, Minneapolis, Minn.

**April 24-26**—Air Transport Association annual engineering and maintenance conference, Drake Hotel, Chicago, Ill.

**May 12-13**—Airlines Medical Directors Association 8th annual meeting, Hotel Shirley Savoy, Denver, Colo.

**May 13-14**—Airline Medical Examiners Association 4th annual meeting, Hotel Shirley Savoy, Denver, Colo.

**May 14-16**—Aero Medical Association 22nd annual meeting, Hotel Shirley Savoy, Denver, Colo.

**May 21-24**—Tenth Annual Conference of Society of Aeronautical Weight Engineers, Hotel Jefferson, St. Louis, Mo.

**May 23-25**—Institute of Radio Engineers Technical Conference on Airborne Electronics, Biltmore Hotel, Dayton, Ohio.

**International**

**Feb. 20**—ICAO Operations Division meeting, Montreal.

**March 15**—First Congress, World Meteorological Organization, Paris, France.

**March 20**—Air Navigation Commission, Airworthiness Div., International Civil Aviation Organization, Montreal, Canada.

**March 27**—Air Navigation Commission, Operations Div., International Civil Aviation Organization, Montreal, Canada.



The Convair B-36, the USAF's intercontinental bomber

Wing span ..... 230 feet  
Length ..... 162 feet  
Height ..... 57 feet 6 in.

Gross weight ..... 357,500 lbs.  
Top speed ..... 435 mph at  
high altitude with jets

Power plants ..... 6 Pratt & Whitney  
R-4360 piston engines plus 4 General  
Electric J-47 jets.

## A Look at U. S. Air Power

# I—AIR FORCE BOMBERS

(This is the first of a series of articles by James J. Haggerty, Jr., military editor, describing the current military plane types of the Air Force and Navy. The series will include AF and Navy bombers, fighters, transports, trainers, and specialized aircraft. Navy bombing types will be considered next issue).

**I**F THE U. S. went to war tomorrow, the Air Force's bombing assignments would be concentrated on three types of planes now in production, possibly abetted later by two other types for which production is contemplated.

The USAF has three staple bombers at present, each designed for a different type of mission: the Convair B-36, the Boeing B-47 and the Boeing B-50. The USAF divides its bombers into three categories: heavy bombers, those which can carry an effective bomb load to a target more than 2,500 nautical miles from their base and return to the same base or one equally distant from the target; medium bombers, those whose operational radius is 1,000 nautical miles but not more than 2,500 miles; and light bombers, who operate within 1,000 nautical miles of their base.

### Convair B-36

The Convair B-36, by these definitions, is the Air Force's only heavy bomber. The 180-ton giant, which is powered by a combination of six piston engines and four jet engines, is credited with a range of 10,000 miles with a 10,000-pound bomb load, or, more explicitly, one atom bomb. Its mission, were we deprived of overseas bases, would be to strike enemy targets with atom bombs from

bases within the United States or Alaska. Its more normal mission, assuming we kept possession of some bases nearer enemy targets, would be to carry tremendous quantities of explosives on shorter-range saturation missions. At reduced ranges, the B-36 can carry up to 75,000 pounds of bombs.

Now in production at Convair's Fort Worth, Texas, plant, the B-36

comes in two versions—the B-36D, the bomber version, and the RB-36D, an externally similar reconnaissance version which will serve as the airborne eyes and ears of Strategic Air Command.

### Medium Bombers

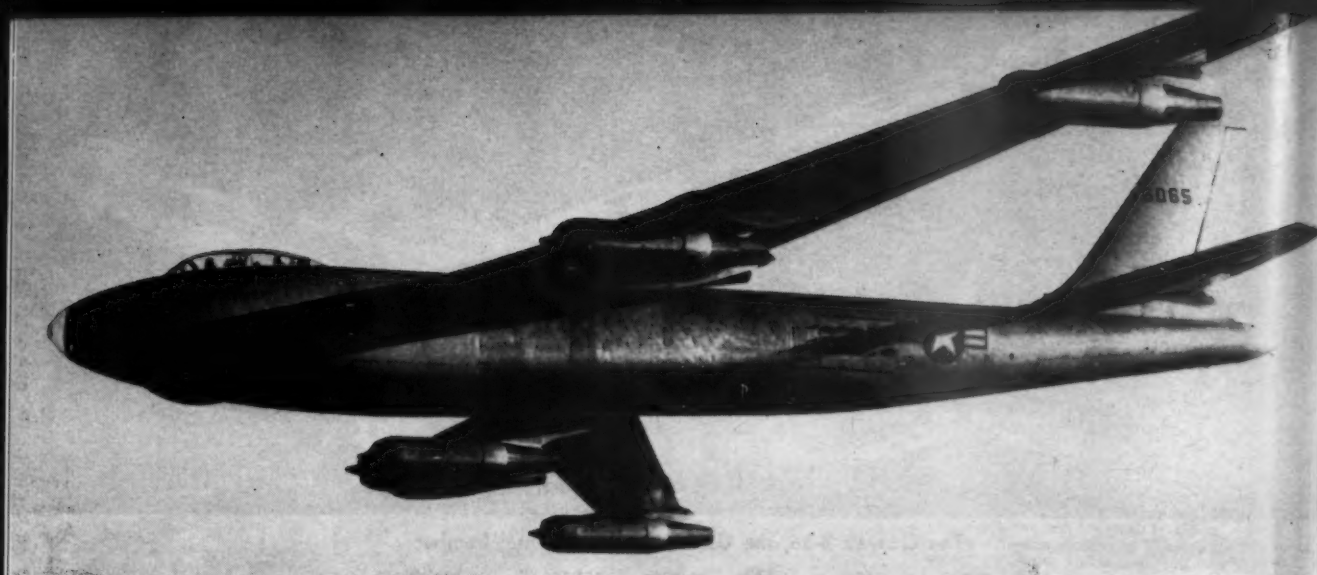
The Boeing B-50D, latest model of a long line of Superfortresses, and the Boeing B-47 jet bomber both

### The current version of the war-time Superfortress, the Boeing B-50D

Wing span ..... 141 feet  
Length ..... 99 feet  
Height ..... 34 feet 7 inches

Gross weight ..... about 150,000 lbs.  
Top speed ..... over 400 mph  
Power plants .... 4 P & W R-4360 engines





Biggest orders in the current procurement program are for the jet Boeing B-47

Wing span .....116 feet  
Length .....108 feet  
Height .....28 feet  
Gross weight .....about 200,000 lbs.

Top speed .....650 mph (est.)  
Power plants .....6 General Electric  
J-47 jets (4 Allison J-35 jets in later  
models)

come within the medium-bomber category. The B-50D, powered by four piston engines, has a range of more than 6,000 miles when fitted with the external 700-gallon fuel tanks shown in the accompanying photo. Since operational radius is generally reckoned as 40% of range, the B-50D comes close to the heavy-bomber class. Its mission would be to supplement B-36 operations, possibly on targets where the B-36's higher altitude and heavier bomb load capabilities are not required. Both bomber and reconnaissance versions of the B-50 are now in production at Boeing's Seattle plant.

The B-47 will come in two models, the six-engined version, some of which are now rolling off the production line, and a later four-engined version. Its range has never been released officially, but best guesses are that the six-engine version will be capable of 3,500-4,000-mile flights while the four-engined B-47C will be longer ranging. While classed as a medium bomber, its mission would differ from that of the B-50D in that it would be assigned the "hot" targets, those with heavy flak and fighter concentrations, where the B-47 could use its speed and high altitude capability to good advantage. B-47's are in production at Boeing's Wichita, Kansas, plant and later will be built by Douglas Aircraft Co., at Tulsa, Oklahoma.



The only USAF jet bomber in operational service, the North American B-45

Wing span .....80 feet 6 inches  
Length .....74 feet  
Height .....25 feet

Gross weight .....about 85,000 lbs.  
Top speed .....over 550 mph  
Power plants ..4 General Electric J-47 jets

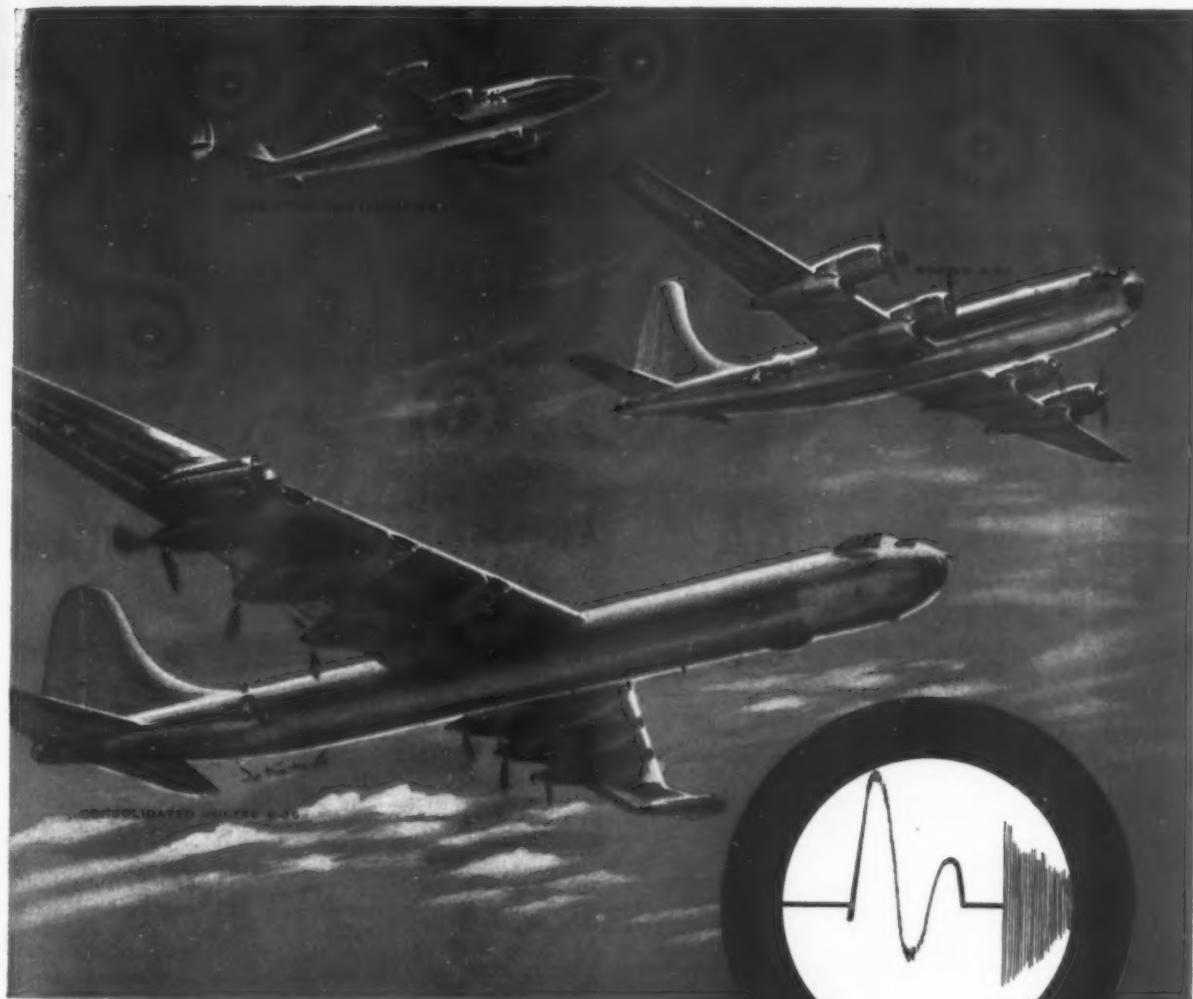


Still experimental, but a possibility for operational use, is the three-jet Martin XB-51

Wing span .....55 feet  
Length .....80 feet  
Height .....17 feet

Gross weight .....75,000 lbs.  
Top speed .....635 mph  
Power plants ..2 General Electric J-47 jets

**North American B-45**  
The only light bomber in USAF service is the North American B-45. However, the B-45 is no longer in production. With a speed of 550 miles an hour and the ability to carry a 10-ton bomb load, the four-jet B-45's only disadvantage was its size. It was just too big, Tactical Air Force officers said, for its design job—support of ground troops. For a long



**RIGHT** for the Constellation...

**RIGHT** for the Strategic Bombers

Constant check while in flight of engine performance . . . so successful in cutting ground time for giant airliners . . . is now being made for the U. S. Air Force's strategic bombers B-36 and B-50 by the Sperry Engine Analyzer.

► Flight engineers aboard the bombers and commercial airliners such as the Constellation and the Stratocruiser find that the Engine Analyzer detects, locates and identifies in seconds . . . through graph-like patterns on the scope . . . irregularities in power plant operation.

► Upon landing this information is passed on to the ground crew who can proceed at once with the necessary maintenance work. Result . . . maintenance time frequently cut from hours to minutes . . . many more potential flying hours.

► For both the airline operator and the military, the Sperry Engine Analyzer pays off in increased aircraft utilization . . . tighter departure schedules . . . savings of thousands of dollars annually.

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FEBRUARY 19, 1951

time TAF was content with fighter-bombers like the Republic F-84E, but with war on the horizon the USAF revived the light bomber requirement.

### Canberra

With no light bomber in production, the USAF has to start from scratch, and as a result a British bomber, the English Electric Canberra, may become the USAF's B-57 (the next designation in line for bombers). The twin-jet, two-place Canberra, which also serves as a multi-purpose fighter, has been studied by the USAF and may go into production in this country. It will probably be built by The Glenn L. Martin Co. A 46,000-pound plane, the Canberra fills a gap between the fighter-bomber and the medium jet bomber.

Another possibility to fill that gap is Martin's own XB-51, a three-jet, swept-wing, two-man bomber with two of the jets mounted externally and the third buried in the fuselage. Also designed for short-range tactical missions in support of ground forces, the XB-51 represents the only U. S. design which might fill the light bomber gap.

Finally, no round-up of USAF bombers would be complete without the old stand-by, the Boeing B-29 Superfortress, the only bomber hold-over from World War II. Long out of production, the B-29 nevertheless acquitted itself nobly in Korea and will probably see a lot of flying in any near-future war. Its mission would be to supplement B-50 operations in the medium piston-engine bomber category.

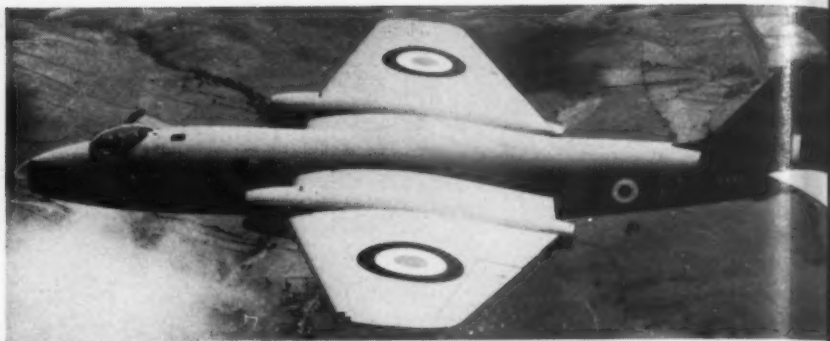
### Air Force to Set Up New Central Air Defense Force

The Air Force will establish a new Central Air Defense Force, operating under Air Defense Command, to handle defenses for the sector bounded by the 89th and 103rd meridians. Headquarters will be at Kansas City, Mo., temporarily, with plans for a later move to Grandview, Mo.

Air Defense Command has previously established an Eastern and a Western Air Defense Force with headquarters at Newburgh, N. Y., and San Rafael, Calif., respectively.

### Navy to Open OCS Schools

Two Navy schools will be established this spring to train selected enlisted men or inductees for commissions. Applicants still must have a college education or the equivalent, but the program will enlarge the Navy's OCS program which since VJ-Day has relied almost entirely on the Naval Academy, the aviation cadet program, ROTC units and the Holloway Plan college program.



This British bomber, the English Electric Canberra, may become the USAF's B-57

|                 |              |                    |                         |
|-----------------|--------------|--------------------|-------------------------|
| Wing span ..... | 63 ft.       | Gross weight ..... | 46,000 lbs.             |
| Length .....    | 65 ft. 6 in. | Top speed .....    | 580 mph                 |
| Height .....    | 15 ft. 6 in. | Power plants ..... | 2 Rolls-Royce Avon jets |

## AA-ALPA Hearings Resumed On Mileage Limitation Issue

By GERARD B. DOBLEN

**A** PRESIDENTIAL Fact Finding Board resumed hearings in New York last week in the dispute between American Airlines and its pilots over a revision of contract which on the basis of pilot demands would include a wage formula based on a mileage limitation. The Board had been in recess for one week because counsel for American Airlines had commitments before the National Labor Relations Board which required his presence in another labor dispute case.

The pilots, represented by the Air Line Pilots Association, were building their claims for increased pay and shorter working hours around the greater productivity of today's larger and faster aircraft. The emergency board's recommendations were expected to set a pattern for possible revision of pilot contracts throughout the airline industry. Mileage limitation is the crux of the fight.

Management, on the other hand, contended that the principal benefits of increase productivity should go to the customer in either reduced fares or, in the face of rising costs, in the maintenance of the existing fare structure. The pilots share in the benefits of this increased productivity only on a relative basis, the company contended.

### Subject to Wage Freeze

With a price-wage freeze in effect, National Mediation Board officials were of the opinion that any recommendations involving increased wages would have to be passed upon by the Wage Stabilization Board, headed by

Cyrus S. Ching. This was the pattern followed in World War II when similar price-wage controls were in effect.


S. Herbert Unterberger, head of the Labor Relations Information Bureau in Washington, testified before the hearing that the number of pilots employed by American Airlines had showed a steady growth until 1946 and that between 1946 and 1950, with the introduction of larger and faster planes, the number of pilots dropped more than 30%. He stated this decline was during a period when pilot productivity on the basis of output per pilot-crew-hour had increased on an average of 43% a year. Man-hour productivity in industry generally throughout the country increased only two to two and one-half percent per year during the same period, he stated.

Francis A. Spencer, secretary of ALPA and an American Airlines copilot, sponsored exhibits purporting to show that on the basis of a 6% load factor there had been a 14% increase in passengers carried in the Convair-Liner over the Douglas DC-3.

### Larger Planes Predicted

Another ALPA witness, Theodore G. Linnert, an aeronautical engineer, predicted that in the next 10 to 15 years, the Douglas C-124A, Lockheed Constitution and Convair C-99 would be used in commercial operations. He stated the military had placed a \$75 million order for turboprop engines for installation in these larger military transport planes.

"Several turboprop power plants are either flying or contemplate flying in military planes," he stated. He



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PICTURED above are the members of the President's Emergency Board in the American Airlines pilot case viewing an exhibit presented by David L. Behncke, president of the Air Line Pilots Association. Reading left to right are: Aaron Horvitz, New York attorney, David L. Cole, New York attorney and chairman of the board, Judge Frank P. Douglass, Oklahoma City, former chairman of the National Mediation Board, and Behncke. The map in the background gives the mileage covered by various types of aircraft in five hours of flight; Tri-Motored Ford, 550 miles (1931); DC-3, 800 miles (1936); DC-6, 1400 miles (1947), and turboprop-type aircraft, 1900 miles (1951).

predicted that when these military transport conversions get into commercial use there will be a 100% to 300% increase in the passenger capacity of commercial transport aircraft.

ALPA proposed 18 new sections to the existing contract. Special attention was being given to the needs of the co-pilot whom ALPA's counsel, Henry Weiss, termed was the "forgotten man" in the American Airlines system, and also the situation with reference to the reserve pilot whom ALPA contended should receive a monthly guarantee of co-pilot base pay, plus \$250 a month.

### Gross Weight Pay

The Board was told that because the operational end of air transportation is measured by the mileage yardstick, it follows that gross weight pay should be measured by the mile. AA pilots proposed that a gross weight compensation section be recommended based on one mill for each mile flown each month for each 6,000 pounds of the maximum certificated gross weight of the aircraft they fly.

The pilots planned to introduce evidence which they claimed would show that new equipment purchased and placed into operation by American Airlines has increased the number of monthly miles flown by 630% since the company was organized 20 years ago.

Other proposed new sections involve minimum pay for irregular flying, landing pay, deadhead pay, expenses away from base, vacations, assignment for training, limitation on hours of service, selection of trip,

sick leave, furlough allowance and operation of new types of aircraft.

When this was written, American Airlines had not put in any rebuttal evidence but the carrier's counsel, Burton A. Zorn, in an opening statement, had indicated the line of attack that the opposition would take.

Zorn took sharp issue with Weiss' opening statement that technological progress is a hollow mockery if the benefits of increased productivity are permitted to flow only to the few—only to the companies themselves. Zorn said that the lion's share of the increased productivity of the larger and faster planes had gone to the pilots and the traveling public.

### Employee Productivity

The productivity of each of American's employees increased \$3,529 during the years from 1940 through 1949, Zorn said, and of this amount, \$1,492 went to the public in the retention or reduction of rates and fares, \$1,947 to increases in wages and benefits of its employees, and only \$72, or about 2%, to the company and its stockholders in dividends or net profits. Other figures in the total related to such things as interest, taxes and increased costs.

Zorn took issue with the pilot's contention that American would make astronomical profits in 1950, contending rather that profits should be looked at for a whole business cycle rather than for any one year. American Airlines, he said, had been able to pay only a 25c dividend on its common stock in June of 1950, the first dividend to its common stockholders in six and one-half years,

following losses during 1946, 1947 and 1948.

He referred to "mileage limitation" as an old chestnut which had been ruled out by previous emergency boards and read from an Emergency Board opinion in the Basic Steel Industry case to support his contention that the buying public or in this case, the air traveler, is entitled to the major benefits of increased productivity through lower fares.

### Pilot Pay Averages

Zorn said that American's first pilots averaged \$12,768 in pay for the year 1950 and co-pilots \$6,480, with the overall average at \$9,372. He contended that that kind of pay compares favorably with that of any other profession. He said that American pilots averaged 78½ hours per month "reporting, on duty, flying and checking in and out" during 1950, and 130 hours per month in overall time, compared to 173 hours a month which is the employment average for the country.

He said pilots average from three to three and one half days a week of free time and he blamed the rigid seniority and bidding system for the fact that this was not uniform for all pilots, asserting that many pilots worked considerably more than 130 hours a month. The senior pilots get the cream and the gravy because ALPA has refused to work with the company to eliminate the inequities of such a system.

Because of the week's recess, it was expected that the reporting time of the Board would be extended by President Truman beyond the originally specified date of February 13.

### PEOPLE IN THE NEWS

**Albert J. Hayes**, president of the International Association of Machinists, has been appointed as special assistant on manpower problems for the Department of Defense. He will continue to serve as IAM president while performing his duties in Washington on a regular basis.

**James Douglas**, secretary of the Phelps Dodge Corp., New York, has been named acting deputy administrator of the Defense Minerals Administration. He was War Production Board deputy vice chairman for metals and minerals in World War II.

**William H. Harrison** and **Eric Johnston** have been designated as members of the Defense Mobilization Board by **Charles E. Wilson**, ODM director.

**Harry K. Clark**, president of The Carborundum Co., Niagara Falls, has been appointed vice chairman of the Munitions Board, serving without compensation. He has charge of production management, including all defense military production programs, facilities and construction, manpower and industrial security, and the aircraft, petroleum and electronics divisions.

# Can Airline Accidents Be Eliminated?

Experts say design and training will do it

By WILLIAM D. PERREAULT

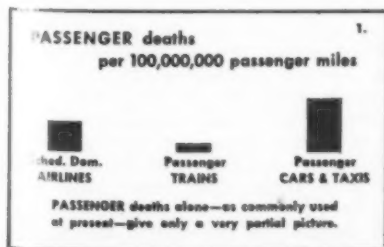
**A**CCIDENTS in scheduled air transportation can be eliminated. To do this the exposure of personnel and equipment to accidents must be eliminated by better aircraft design, well directed training of air and ground crews and the coordination of the biological sciences and engineering. Meanwhile, until the industry applies the lessons it has learned, it should adopt a method of statistically presenting accident facts which will reflect the true nature of air transportation accidents.

These are the basic ideas put forth during a session on flight safety during The Institute of the Aeronautical Sciences' annual meeting in New York late last month. The session was directed by Jerome Lederer, president of the Flight Safety Foundation, and held in cooperation with the Daniel and Florence Guggenheim Aviation Safety Center of which Lederer is director.

The most common yardstick used in measuring aviation safety is the number of fatalities per 100 million passenger-miles. Rudolf Modley, consultant with the Aircraft Industries Association, proposed that the industry adopt a method of presenting accidents statistics which will provide a useful and equitable means of comparing the economic and social effects of accidents in all types of transportation.

## Plane, Train Toll

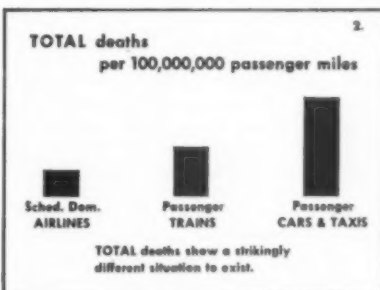
Using the period from 1940 through 1949, when the scheduled domestic airlines experienced 851 passenger deaths, Modley showed that only 447 people were injured. This compared with 46,141 passengers killed in train accidents during the same period. As shown in the accompanying chart, this gave the railroads far fewer passenger fatalities per 100 million passenger-miles than experienced by the airlines.



When the total number of deaths and injuries resulting from train operation in the same period is considered, the record takes on an entirely different look. There were 10 people injured for every person killed by trains in the ten-year period; a total of 474,747 persons injured. This compares with one person injured for every two persons killed by airline accidents.

And as expected, the automobile and taxi shows up as the most dangerous vehicles in either type comparison. It might be noted that, despite the high accident rate in this type vehicle, there were 35 persons injured for every fatality experienced.

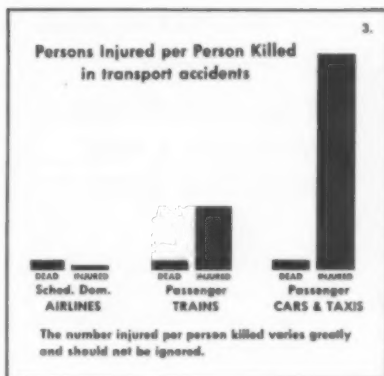
This system of accounts does not varnish the accident facts. The fatalities per 100 million passenger-miles will remain a useful figure. But the fatalities plus injuries offer a simple measure of the economic



and social effects of transportation losses. To measure this effect, Modley said, both types of losses are converted to life years and work years lost through accidents. This method, originated by the American Medical Association, provides this comparison. It delineates between the effects of death to an aged man, near the end of his useful life, and that of a younger man with his life ahead of him.

## Study Near-Accidents

The greatest area for improvement in airline safety is the coordination of engineering and biological sciences, according to Ross A. McFarland of Harvard School of Public Health. By more attention to the near-accidents engineers could overcome their natural tendency to ignore the human variable. McFarland said that engineers overlook the human variable on the basis that it



is too complex to handle. In contrast he felt that it would take little effort to correct many of the design shortcomings brought about by the human variable.

McFarland referred to the apparent tendency to design modern fighter aircraft for small pilots and said this is all right providing only small pilots are permitted to fly the planes. Noting that cramped quarters provide the setting for accidents, he proposed that the "machine" should be designed from the man outward, treating the controls as an extension of the man's nervous system.

In considering oxygen requirements, for instance, McFarland urged that designers must consider factors, other than altitude, which will lessen man's tolerance for altitude. He noted that in one three-month period there had been 33 instances of smoke in cockpits recorded, all of which had this effect. Of these, 19 were the results of electrical fires, six from heating systems, three from hydraulic systems, etc.

## Pressure Altitude Design

The trend in pressurization levels in transport cabins has been to use pressure equivalent to an 8,000-foot altitude. This arbitrary standard, which he suggested might have resulted following a survey which showed there were a number of airports located that high above sea level, ignores medical considerations. Further checking between designers and medical men would have pointed to a desirable pressure altitude of about 3,000 feet, McFarland indicated.


Individual pilot problems are no small factor in human engineering for air safety. There is much to be learned. In one study McFarland


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found that most domestic airline accidents occur during the first two hours of flight. This suggested that preoccupation, not fatigue as it is normally pictured, was a factor of importance.

Such considerations should be borne in mind in regard to pilots who operate their own businesses, as many do, and might carry into the cockpit problems from their outside interests.

In his opinion, pilots who require insulin to counteract sugar diabetes should be removed from flight, McFarland said. He based this conclusion on three fatal accidents with which he is familiar involving diabetic pilots in which the condition could have been a contributing factor.

## Age No Detriment

Despite his feeling that certain medical problems should rule out pilots for airline service, McFarland did not consider age alone as a cause for grounding pilots. A United Air Lines spokesman, agreeing with him, reported that there are eleven pilots with UAL over 50 years of age and some 44 over 45.

Air safety must begin with preliminary design and progress through each stage of development and production, Major General V. E. Bertrandias told the IAS. He urged that he "firmly believed we have stretched pilot error into unrealistic areas" when actually the cause of most accidents is one of asking too much of the pilot. As director of Air Force Safety, Bertrandias, who stated that service accidents destroy more aircraft than enemy action, has promoted a USAF-aircraft industries program for exchanging design data relating to safety. He indicated that some of the manufacturers, through the Aircraft Industries Association, have been quick to cooperate while others have been reluctant because of competitive considerations. The first group taking part in the program worked with the USAF for four months during which time the USAF footed the bill.

Like Bertrandias, C. M. Christen, flight safety engineer with United Air Lines, felt that accidents are often built into airplanes. He noted that in one current transport model it requires 12 procedural steps to shut off an engine and feather the propeller. Such precision procedures lead to trouble, he said.

No amount of training, research or testing can correct the "obvious error in design" of this system. This was listed as typical of lengthy operating procedures "used as a crutch for poor design, lack of simplification and in some cases, to overcome an unsafe condition." Emergency procedures

must be such that they can be handled with accuracy and dispatch.

## Prototype Testing

Christenson, a UAL pilot with 15,000 hours' flight time to his credit, placed considerable emphasis on proper prototype testing and related design refinements. In some instances, he said, delivery dates of new type aircraft have been such that first production models were rolling off the line before the results of the prototype testing were fully analyzed.

While, in his opinion, the T-category CAR requirements under which transport aircraft are certificated represent minimums of performance, current design practice is such that the aircraft meet the requirements only through maximum demonstrated performance efforts. Even so, development of special accessory equipment such as automatic feathering, which in themselves create a problem, are used to meet what should be minimum performance requirements.

Christenson urged that malfunctioning tests on prototype aircraft to determine the effects of one system's malfunctioning on other aircraft systems is a much-neglected phase of prototype testing. The prototype aircraft should be assigned to different geographical areas, during all seasons of the year and in all types of meteorological conditions during its test period. Combined with malfunctioning tests these operations should establish such basic requirements as weather minimums and equipment dispatch restrictions which should be used in scheduled service.

## Knowing the Plane

Neither in-service time nor continued testing is the answer to safety in new transports, he stated. It is primarily a "down-to-earth job" of getting acquainted with the airplane that is required. The degree of advance over previous designs should be consistent with advancements in other facilities required to operate the aircraft. Spectacular advancements in design provide just as spectacular operational problems and adjustments.

Christenson placed considerable emphasis on the proper selection of pilots, engineers and maintenance personnel for the aircraft development group. These specialists must be analysts capable of relating operational conditions to the practical aspects of their own requirements for flying the plane, maintaining its fuselage, engines, instruments, etc. Finally these men must have the authority to follow through changes in design and procedures as experience dictates.

- B-36 'Mystery' Flight
- Security Loses Its Punch
- Convertiplanes As Troop-Carriers

By James J. Haggerty, Jr.



**L**AST month a Convair RB-36D reconnaissance bomber landed at Fort Worth, Texas, after having remained aloft 51 hours and 20 minutes on a pre-delivery test flight.

Its landing was greeted with considerable fanfare. The flight was hailed as "an unofficial endurance record." But no one would comment on how far it had flown for "security" reasons.

The United Press quoted one official as saying "if" it had averaged 300 miles per hour it would have flown more than 15,000 miles. This sounded to us like a reasonable statement. By the same token, "if" it had averaged 400 miles per hour it would have flown more than 20,000 miles and "if" it had averaged 500 miles per hour—well, how far do you want to carry it?

By long-distance phone we talked to a Convair official at Fort Worth who said he actually didn't know how far it had flown because it had flown so many different legs on its mission that the navigators hadn't had time to compute the actual distance. Having been an Air Force navigator for some six years, we weren't buying that one. If the USAF, or Convair, has a navigator who can stay up in the air for 51 hours and not know how far he has flown we suggest he be transferred to the Pentagon where his talents can be put to better use.

The whole mystery of how far the plane had flown and the "security" surrounding the release of the actual figure intrigued us, and being always of a skeptical nature where this particular plane is concerned, we spent some time in trying to find out how far it actually had flown. We found out after two weeks of prying, from a Pentagonite who shall remain nameless because he has a disinclination to spend the rest of his tour of duty in Alaska.

#### Reason for Security

The reason for all the "security" became immediately apparent. The plane had flown something over 10,000 miles and had averaged not 300 miles per hour, not 400, nor 500, but just a shade over 200. Obviously, for a plane which is tagged with a "top speed over 435 miles per hour," this is something less than an achievement of note.

A keen observer might also note that if it averaged only 200 miles per hour it apparently flew the entire mission at low altitudes, since flying at design combat altitudes of 30,000 to 50,000 feet would have sent the true air speed soaring due to the difference in atmospheric pressure. Therefore, even though the plane had up to its press release range of 10,000 miles, it was a hollow victory, since it is supposed to be able to fly 10,000 miles under combat conditions (chiefly high altitude over long stretches of enemy territory) in order to justify its existence as an "intercontinental" bomber, or in this case an intercontinental reconnaissance plane.

But we have spent a good many thousand words in these dispatches on the subject of the B-36 and we have no desire, for the moment, to worry the subject further. The point at issue in this particular case is the matter of the "security" label slapped on the distance the plane had flown. Since our press agents have

been proclaiming for five years (even before the plane had flown) that the B-36 is capable of flying 10,000 miles, it could certainly not arouse very much interest in the Kremlin if it were announced that the plane had actually done it.

"Security" has become a catch-all for every piece of information the military wants withheld because (a) it might be embarrassing to high government officials, (b) it might be embarrassing to low government officials or (c) it might somehow embarrass somebody who knows a high (or low) government official.

#### Busy Rubber Stamps

The Pentagon and its field branches have become "stamp-happy." Without regard for the content of the document, people are slapping "restricted," "confidential," and "secret" stamps on practically every document which floats through the corridors. Not that we are particularly concerned with the additional confusion in the Pentagon that this policy, borne of war-time panic and confusion, engenders. But it has another far-reaching effect and that is the fact that it has made military security a laughing stock.

The newsmen who cover the Pentagon, whose job it is to tell the people of this country how we are preparing for war, have become openly contemptuous of military "security." After they run into several cases of phoney "security" such as the B-36 case, they can hardly be expected to pay much heed when they are advised that a certain story they are planning to write might violate security. The result is a number of "leaks" which might have been averted by a sound security policy.

The numerous Congressmen who have expressed concern over these "leaks" might look into the subject. There is one major step the military could take toward tightening its security, and that is make a "secret" worthy of its name.

#### Military Interested in Convertiplane

**T**HE convertiplane, that mongrel of the aviation industry, appears about to come into its own, after having been ignored for a good number of years.

The convertiplane, in case you've forgotten, is a plane which combines the forward flight characteristics of a fixed wing airplane with the vertical ascent and descent capabilities of the helicopter. There have been a number of designs floating around the industry for years, and one or two convertiplanes have actually flown. But further development of the type, which shows basic promise of being a very important military vehicle, suffered from that old industry bugaboo—lack of money.

But now the Army and the Air Force have come forth with invitations to submit convertiplane designs and 17 companies have entered the competition. Initial plans call for a small evaluation order, but what the Army is interested in is the eventual development of an assault transport convertiplane which could carry 20 to 30 troops at normal transport speed and drop them into an unimproved field helicopter-fashion. It's still a long way off, though; the current competition calls only for design studies and the USAF doesn't expect to have a flying model until 1953.

## PRODUCTION SPOTLIGHT

**First MDAP F-84E's:** Republic Aviation Corp. has started deliveries of F-84E jet fighters to North Atlantic Treaty Nations under the Mutual Defense Assistance Program. The company has prepared an initial shipment of the planes, standard ground support fighters, in the U. S. Air Force, and it is now en route to Europe. The recipient nations were not named.

Meanwhile, a flight instruction course for the European pilots who will fly these and other U. S. planes in the aid program is now under way in the U. S. Other classes in maintenance, supply, etc., will be scheduled later through the USAF's Air Training Command. Republic service representatives will be assigned to work directly with NAT nations getting the planes.

**Tool Makers Scarce:** A plea to Selective Service to give favorable consideration to deferment from the draft of tool and die makers "vital to armament manufacturing" has been made by the National Tool and Die Manufacturers Association, representing 425 shops in New York and New England. The association emphasized that tool and die makers are irreplaceable without long training and that no more are available now than at the start of World War II, although indications are that demands of the industry will be trebled or even quadrupled under the current military expansion program.

**4-0-4 Engines:** The Glenn L. Martin Co. will use two different versions of the Pratt & Whitney R-2800 engine in its production of 4-0-4 twin-engined transports. On the 35 planes Martin is building for Eastern Air Lines, the company will use the R-2800-CB-3 engine, while Trans World Airlines' 41 4-0-4's will have the R-2800-CB-16. Major difference between the two versions is a single stage supercharger in the CB-3 compared with a two stage supercharger in the CB-16. A third version of the engine, the R-2800-CB-17, will power Pan American World Airways' Douglas DC-6B four-engined transports. The CB-17 uses a different type fuel which provides an additional 100 horsepower.

**Sapphire Sparks Expansion:** Much of the increased hiring and facility expansion taking place at Wright Aeronautical Co. is directly related to large scale production plans for the J-65 Sapphire engine, which Wright will call the Typhoon. The engine was developed by the British Armstrong Siddeley Motors Ltd. and taken over by Wright for U. S. production under license. It is scheduled for installation in the Republic F-84F swept-wing jet fighter and is under consideration for installation in other planes, notably the Boeing B-47 Air Force jet bomber. The attractive feature of the engine is a fuel consumption rate considerably lower than that of American engines in the same power category.

**Heat Treating Consolidated:** Douglas Aircraft Co. is nearing completion of a new building at Santa Monica, Calif., for the consolidation of its heat treatment sections, which are now scattered throughout the plant. The new building will cost about \$100,000.

**Test Pilots at Navy School:** Staff test pilots from aircraft manufacturing companies are being included, by Navy invitation, in the advanced flight test pilot school being conducted by the Navy at Patuxent Naval Air Test Center, Md. Each company was invited to enroll one pilot in the five-month course previously reserved for military personnel and Navy engineers. In addition to the company pilots, the roster will include 13 Navy officers, three Marine officers, several Navy civilian engineers, two Royal Air Force pilots and one U. S. Air Force pilot. The course includes a heavy flying schedule as well as a wide range of ground courses in related mathematics and engineering.

**New MB Agency:** The Munitions Board has established an Aircraft Production Resources Agency at Wright-Patterson AFB, Dayton, O. The new agency, which takes over and expands the duties of the former Aircraft Scheduling Unit of the Board, will consolidate requirements for materials and other resources needed for the military aircraft production program.

—J. J. H.

## INDUSTRY PERSONNEL

Dean Phillips, formerly with the labor relations department of North American Aviation in Los Angeles, has transferred to the new Columbus plant as division industrial relations director. Larry Platt transferred from the safety department in Los Angeles as chief safety engineer at Columbus.

Ray Tonks has resigned as manager of Pacific Airmotive's C-54 overhaul base at Chino, Calif., to join Glen Ode-kirk's Southern California Aircraft Corp. at Ontario, Calif.

Joseph V. Miccio has been appointed general manager of the newly established Electronics Division of the Curtiss - Wright Corp. He was formerly controller of CW's Airplane Division, and before that had been treasurer - controller of Aircooled Motors and had been assistant to the financial vice president of Republic Aviation.

Joseph A. Despres has joined the staff of the engineering and production division of Airborne Instruments Laboratory as administrative assistant in the office of D. M. Miller, vice president and director of the division.

E. M. Lester has been appointed to the new post of assistant general manager of the Fairchild Engine Division of Fairchild Engine and Airplane Corp.,

which he joined in 1941 as assistant to the general manager. He recently had been director of engineering for the division. Alfred T. Gregory, formerly chief engineer, has been named head of the engineering division.



Lester

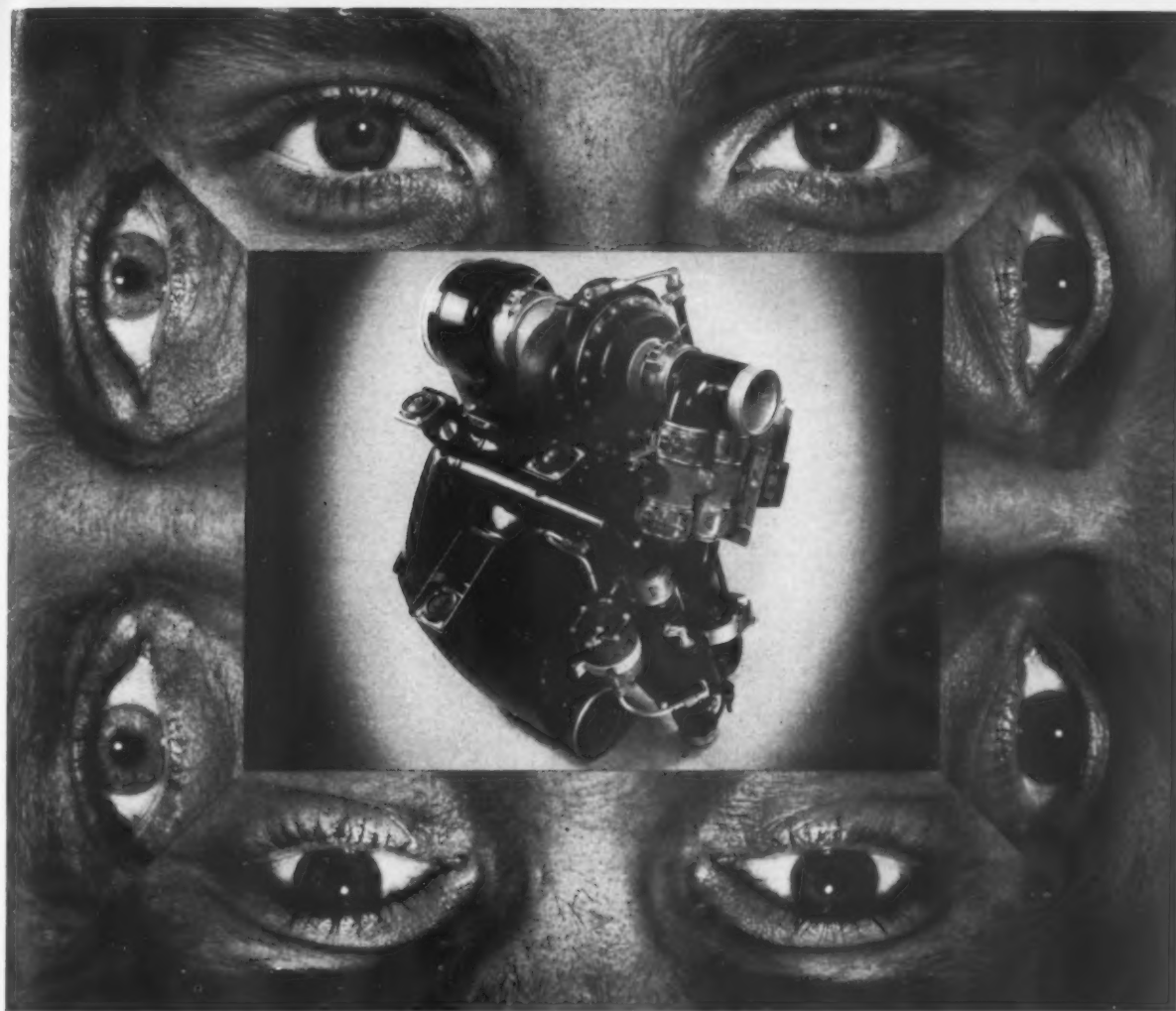
Gregory

## MILITARY PERSONNEL

Rear Adm. William D. Johnson has been detached from duty as Assistant Chief of the Bureau of Aeronautics and transferred to duty as Chief, Naval Air Technical Training, Memphis. He will relieve Rear Adm. Harold M. Martin, who takes over a command at sea with acting rank of vice admiral.

Lt. Col. Fred J. Ascani, director of experimental flight test and engineering at Edwards Air Force Base, Muroc, Calif., has been promoted to full colonel.

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## 4,000 PLANES IN SERVICE:

# How Russia's MIG-15 Compares with F-86

By RICHARD G. WORCESTER

**P**RACTICALLY nothing reliable was known of the MIG-15 until the USAF encountered Russia's best fighter earlier in the winter when the U.N. forces were close to the Manchurian border. Allied Air Intelligence has now estimated that nearly 4,000 of these aircraft are in service—about half this number being held in a closely knit mobile interceptor force. The scale of the MIG production program has, until a year ago, been a well-kept Soviet secret.

From captured documents and motion pictures it is now possible to piece together the facts and attempt a preliminary overall design and performance analysis comparing the aircraft with the North American F-86—the only airplane now in service which can out-perform it.

The approximate thrust output of the engine in the MIG-15 can be determined by tracing the history of Russian turbine progress and comparing what might be expected with the known facts. In 1945-1948 the Russians acquired the production know-how of a German 2,000-lb.-thrust engine and designs of a bigger project, along with several dozen early RB-45 Nene jets. If the Russians were unable to improve upon the thrust of the RB-45 the MIG's performance would be about equal to the Grumman F9F-3 with a speed of 560 mph; rate of climb of 5,900 ft./min., and time to 30,000 feet of 9.5 minutes. This would not warrant use of a swept wing.

After four years' research the West

has boosted the wet rating of the J-42/Nene to nearly 6,000 lbs. static. The fully developed J-48/Tay is giving nearly 7,000 lbs. It seems logical and cautious to assume that some of this development has also been within the capacity of the Russians but it is reasonable to conclude that their progress has not been so rapid bearing in mind the West's ten-year understanding of centrifugal impellers. Moreover, the West originated the engine and so it is fair to assume that we still retain a technological lead. From this it seems likely that the thrust of the engine is about 5,000 lb.

If a photograph of the MIG is superimposed on one of the F-86, it is clear that the span, sweep and wings of the two aircraft are practically identical. The size of the pilot's head is a reliable constant, and this establishes the relative scale. The pilot and the air intake positioning is also identical except that the Russians have neglected to mount the lip fairing on the intake. The body is

shorter and the stabilizer is higher to avoid the wake of the mid-wing. The vertical surface is large to the point of being grotesque.

The greater thrust of the engine and the neater shape of the F-86 undoubtedly accounts for its greater speed and climb. Otherwise the performance is roughly comparable. The limiting Mach number works out considerably lower than that of the F-86 mainly due to the clumsy tail surfaces, the adverse inter-relationship of the cockpit fairing and the intake,

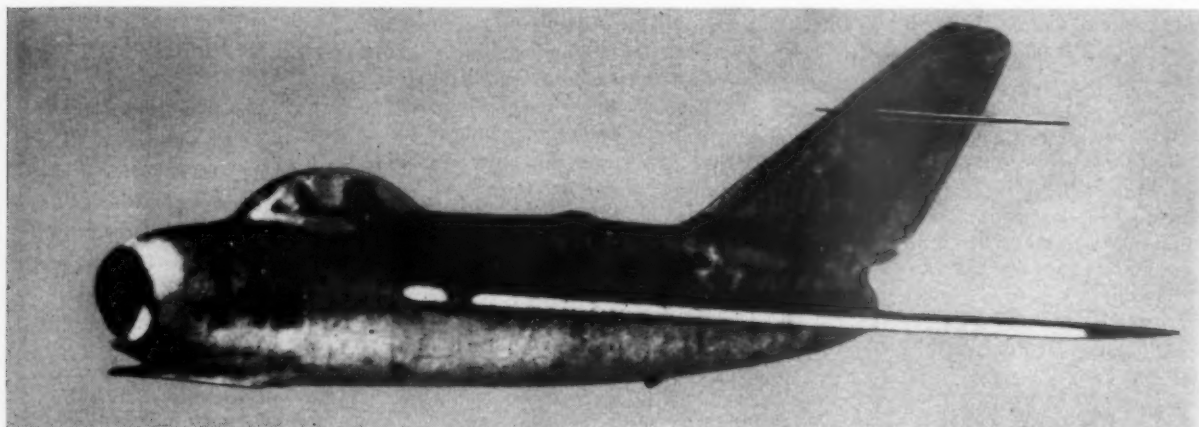
## Soviet MIG-15 vs. U.S. F-86

### Combat Performance

|                            | MIG-15         | F-86A          |
|----------------------------|----------------|----------------|
| Vmax, mph TAS,             |                |                |
| sea level .....            | 640            | 685            |
| Vmax, mph TAS,             |                |                |
| 30,000 ft. ....            | 560            | 600            |
| Limiting Mach number ..... | .87            | .95            |
| Max. rate of climb,        |                |                |
| S. L. ....                 | 8,200 ft./min. | 9,400 ft./min. |
| Max. rate, 30,000 ft. ..   | 4,000 ft./min. | 4,600 ft./min. |
| Service ceiling .....      | 48,000 ft.     | 47,000 ft.     |
| Turning radius (450        |                |                |
| mph), miles .....          | 2.8            | 2.9            |
| Minimum speed mph          | 106            | 107            |

### Specifications

|                        |                 |                 |
|------------------------|-----------------|-----------------|
| Span .....             | 37 ft.          | 37 ft. 1 in.    |
| Length .....           | 36 ft. 8 in.    | 37 ft. 6 in.    |
| Height .....           | 15 ft. 2 in.    | 14 ft.          |
| Weight (max.) .....    | 14,000 lbs.     | 13,715 lbs.     |
| Static thrust .....    | 5,000 lbs.      | 5,500 lbs.      |
| Gross wing area .....  | 285 sq. ft.     | 275 sq. ft.     |
| Wing loading .....     | 49 lbs./sq. ft. | 50 lbs./sq. ft. |
| Wing sweep .....       | 35°             | 35°             |
| Stabilizer sweep ..... | 35°             | 35°             |



ONLY RELIABLE picture so far published of Russia's 640-mph MIG-15 shows its close similarity to the F-86. These airplanes

are being built at the rate of 3,400 a year and nearly 4,000 are in service, outnumbering the West in swept-wing jets by about 8:1.

## DESIGN-ENGINEERING

and small details such as the external armament and the position of the stabilizer.

The single-piece blown cockpit fairing, the structure of the windshield and the overall line of the aircraft with the optimum jet tail-pipe length, stamps this MIG design, however, as a formidable weapon. The wing thickness ratio is identical with that of the F-86.

There may however be one fatally weak point about the MIG. The Russians can copy the external line of the F-86 (although the tail shows they have made at least one error) but copying the internal structure is less easy.

The F-86 is not just a North American Aviation Corp. design. It is a fighter which has been evolved because of the very high level of overall technical knowledge in the U. S. which in turn is due to the vast test facilities all over the country. It is incontestable that the Russians have far less research capacity and their whole effort has been directed towards production. It is, therefore, mostly unlikely that the MIG has the comparatively small trim changes at high speeds or has so satisfactory a set of flying controls as are insisted upon for all U. S. fighters.

It is possible, and even probable, that at 600 mph. the F-80 and F-84 are much easier airplanes to handle than the MIG and this could account for the way the 40-mph. speed handicap has not prevented the straight-wing equipment from proving effective against the MIG.

### Future MIG Possibilities

Looking into the future at the next phase of MIG development, it is likely that only small changes to the structure would be needed if the thrust were raised to 7,500 lb. which is as high as the Russians are likely to be able to push the basic Nene engine.

This would give the MIG a speed of 700 mph (assuming the structure has an ultimate design factor of about 1.5 and there are no control problems) and with its lower wing loading it might have an edge in performance over the F-86. But it would be fairer to compare this future MIG with the F-84F or the Grumman F10F which will both have a 30-mph. speed advantage.

In the more distant future the Russians might use their German rocket experience and build a rocket attachment giving the airplane a supersonic speed at all altitudes. But it

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AIRCRAFT AND ELECTRONIC PRODUCTS

# Design Trends

By Richard G. Worcester



**F**OLLOWING figures serve to show the extent to which the West is throttling itself by ordering too many different designs of aircraft. The U. S. now has in service or on order 30 different types of fixed-wing combat aircraft. Britain has 24 and Russia has 19. The U. S. is currently ordering 29 different models, Britain is procuring 18 and Russia nine. In 1945 and 1946 the average U. S. annual procurement totaled 1,600 combat aircraft and is now averaging about 2,500. Britain was buying 500 and is now getting about 700 aircraft. During this period Air Intelligence puts the Russian procurement at 8,800 a year. In other words the average production run of one design per year in the U. S. is 86 aircraft, in Britain it is 39 and in Russia it is 975.

There are about 3,400 MIG-15 fighters being built in Russia each year as of December, 1950, and assuming that it takes nine men a year to build one airplane (a reasonable postwar constant) there must be over 300,000 workers engaged in production of this one design. This is 74,000 more workers than are distributed in the entire U. S. aircraft industry in 1950.

It is reasonable to hope that the U. S. and British procurement agencies ordering so many different designs would at least be able to find a superlative product for every possible theater of operations. But the Far Eastern situation makes it plain that nothing in their background has adequately conditioned them to cope with the Korean War—which, incidentally, is likely to expand as a consequence of branding Red China as an aggressor. The types of airplanes like the F-51 we need desperately are obsolete or obsolescent. The speed with which industry destroys its jigs also show that the military has not understood that these jigs are vital munitions of war which should, as far as possible, be stockpiled.

To beat the Russians at their own game the whole of the aircraft industry, Henry Kaiser, the auto workers and light engineering trades should all concentrate on, say, the following 13 war-winners: bombers—the B-36D, B-50 and B-47C; fighters—the F-94S, F-84F and F-86D&E; transports—the C-97C, C-124A and C-119, and the Navy F4U, A2D, P2V and R6D (DC-6B). These airplanes could take care of any situation anywhere, assisted by a tactical European force of the following: Meteor, Vampire, Venom, Canberra, Attacker, Firefly, Sea Fury, Hastings and Valetta.

The target must be to build an average run of 1,000 of each of these 21 types annually. This is within the U. S. capacity and to reach this Britain would be assisted by the European aircraft industry.

The essential purpose of the Institute of Aeronautical Sciences' symposiums is presumably to pick out the work of one laboratory which is sufficiently significant to be of probable influence on others similarly engaged. Judged by this standard the Nineteenth IAS Annual Meeting in New York last month cannot be regarded as a success. The one moment of real tension came when Dr. Theodore Von Karman (Chairman, USAF Scientific Advisory Board) was asked to give his opinion on Shaw's astonishing new acoustic theory of airflow. Karman's reply in effect that this could be an explanation of the phenomena, secures for Shaw a small—and possibly a large—place in aviation history. Karman's influence in aerodynamics is now just fabulous—he looks like the Einstein of aerodynamics—and he is. The most futile moment was when University of Maryland's Dr. S. I. Pai treated the assembly to an avalanche of algebra on the stability of two-dimensional laminar jet flow of gas and the first speaker in the discussion which followed pointed out, if we understood him correctly, an error in the basic premise. The trouble was that Dr. Pai remained seated and left everyone uncertain which one of the two was right.

would need an ultimate design factor of 18. This type of interceptor would be met by a fighter powered by two Westinghouse J-40 jets with methanol and afterburning totaling 28,000 lb. static, giving a speed of over 1,000 mph.

Thus, which ever way you look at it, the U. S. has equipment of marginally greater performance, but the serious aspect of the whole situation is that the MIG can intercept the best USAF Strategic Air Command bombers. Indeed, the only obvious way to penetrate such a screen would be to fly at night, because night jet interception is still a very shaky science. If attacking B-36's were still over Russia at dawn on the way back they would be flying light and might be able to reach 50,000 feet, which would be some kind of defense.

It is worth emphasizing that the true combat qualities of the MIG-15 are still far from conclusive, because the Reds are not using all the sky for maneuvering that they could. The huge numerical preponderance can be turned very much to our disadvantage unless the build-up of improved F-86 and F-84F equipment is accorded the highest priorities.



**6,500-hp Turbine—**First picture of the British Bristol coupled-Proteus turbine before leaving the makers on its way to Saunders-Roe where it will be mounted in the first production 315,000-lb. Princess flying boat. The Princess has four pairs of Proteus turbines in the four inner nacelles and a single Proteus in each outer nacelle. This installation is similar, but not identical to, that intended for the second Brabazon which, with all three Princess flying boats, should fly in 1952 or 1953.

## OPERATIONAL PROBLEMS AIRED:

# Technical Meetings Review Helicopter, Turbine Advances

By WILLIAM D. PERREAULT

**P**ROGRESS is not generally made in a spectacular way. Nowhere is this more in evidence than by attending one of the annual technical meetings. But each year new steps are made which add to last year's knowledge and open the door to next year's discoveries. This trend was prominent in this year's annual meeting of the Institute of the Aeronautical Sciences held in New York Jan. 29 through Feb. 1.

Military needs have increased helicopter production to new highs. Operational problems are being given more attention as reflected in the development of rotor blade ice elimination equipment and of an autopilot system which stabilizes helicopter flight. Both topics were the subjects of discussion at New York.

Helicopters have been notoriously unstable, requiring full-time attention of the pilot in the tiring effort to fly the craft. Piasecki Helicopter Corp.

announced that it had placed a production order with Sperry Gyroscope Co. for A-12 gyropilots for the HUP-1. These gyropilots, already proved in flight tests, provide a new degree of stability to the helicopter and ease the pilot's burden.

## Standard Unit

Of particular importance to this application is the fact that the Sperry A-12 is a standard piece of equipment. Models of the A-12 can be taken off the regular production line for applications in the Boeing B-47 and other USAF and Navy planes and readily adapted to the HUP-1's. Weight involved is counteracted by the removal of stabilizing surfaces previously required to ease the pilot's control load.

Unlike earlier attempts the Piasecki-Sperry program appears to be successful because of its routine nature. The standard autopilot units, gyros, indicators, servos and controls, are connected into the heli-

copter's control system just as they would be in a regular airplane. When the rudder servos move, the rudder pedals also move since they are directly interconnected.

Yet the simplicity is such that in one hour and 15 minutes' flight time on the first day of test flights stabilized hovering flight was achieved. The same day landings using automatic pilot controls were accomplished.

Other than to state that a large production order had been placed, no comment on dollar volume or numbers was available. Indications are that the contract for the Sperry A-12's exceeded \$2 million value and that other orders will follow for similar units for the USAF's Piasecki H-21 helicopter.

## Rotor-Blade Icing

When helicopter use was more restricted, rotor-blade icing did not seem important. Now the Navy considers efficient rotor-blade ice protection is critical. To combat possible icing tendencies engineers at Sikorsky Aircraft Division of United Aircraft developed a combustion-heater-type thermal deicer for a H-5 helicopter. In a test installation a Surface Combustion Corp. heater, rated at 200,000 British Thermal Units output, was experimented with successfully.

While test results to date are not conclusive, Sikorsky's chief design engineer, Edward F. Katzon, blazed a new trail. The heater was mounted outside the helicopter with flexible

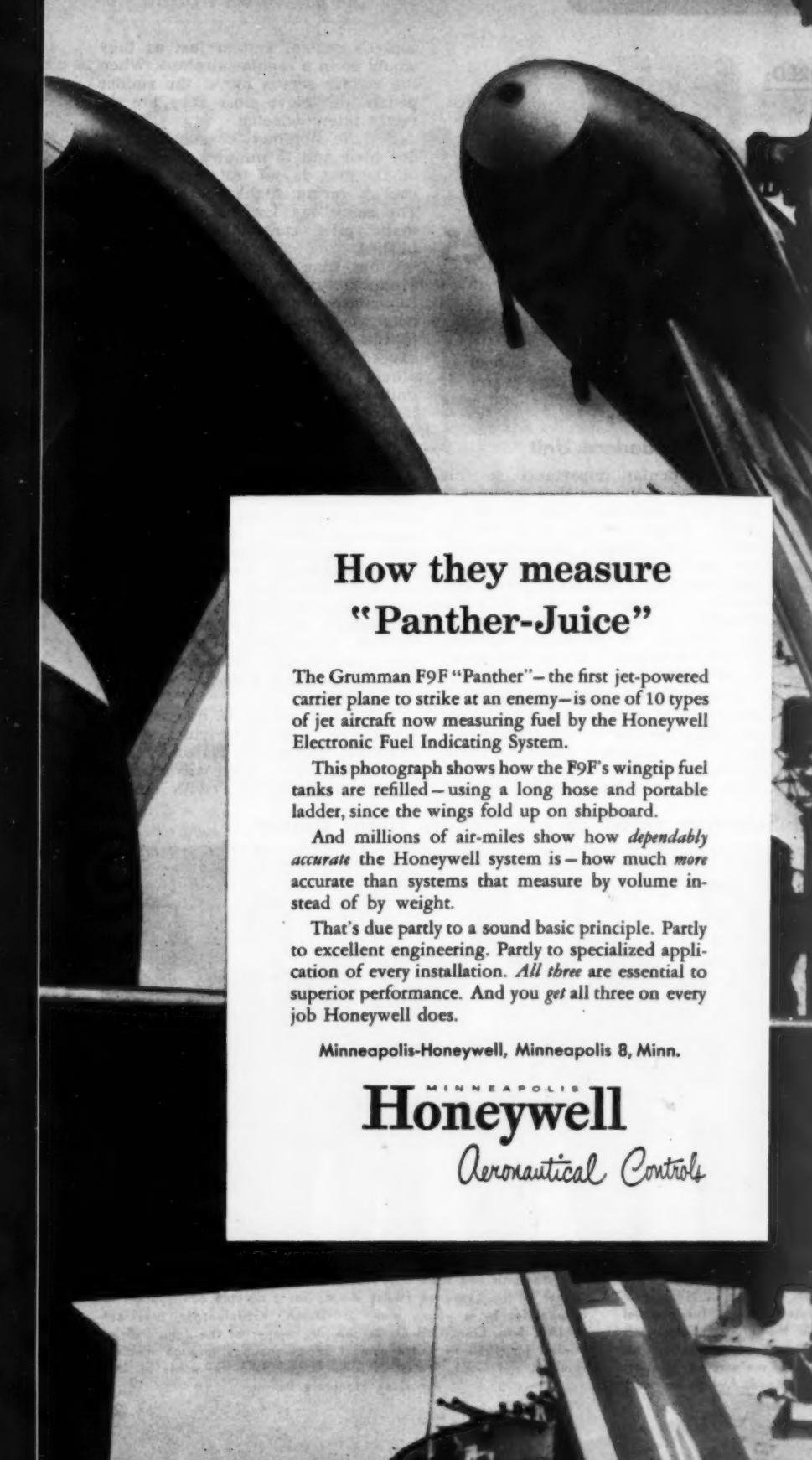
## Engineers and Scientists Feted at IAS Honors Night Dinner



Gen. James Doolittle (left) is shown presenting the 1950 Guggenheim medal to Dr. Hugh L. Dryden, director of NACA for outstanding leadership in aeronautical research and fundamental contributions to aeronautical research. In the group photo, (left to right) are Roscoe R. Braham, Jr., recipient of the Robert M. Loew Award for contributions to the science of meteorology; Robert R. Gilruth, winner of the Sylvanus Albert Reed Award for work

with transonic and supersonic freely flying models; Frank N. Piasecki, winner of the Lawrence Sperry Award for a notable contribution to aeronautics by a young man; J. "Dutch" Kindelberger, president of IAS; Brig. Gen. Otis O. Benson, Jr., winner of the John Jeffries Award for 1950 for advancement of aeronautics through medical research and Capt. Walter S. Diehl U.S.N., who was made an IAS American Honorary Fellow.

FEBRUARY 19, 1951



## How they measure "Panther-Juice"

The Grumman F9F "Panther"—the first jet-powered carrier plane to strike at an enemy—is one of 10 types of jet aircraft now measuring fuel by the Honeywell Electronic Fuel Indicating System.

This photograph shows how the F9F's wingtip fuel tanks are refilled—using a long hose and portable ladder, since the wings fold up on shipboard.

And millions of air-miles show how *dependably accurate* the Honeywell system is—how much *more accurate* than systems that measure by volume instead of by weight.

That's due partly to a sound basic principle. Partly to excellent engineering. Partly to specialized application of every installation. *All three* are essential to superior performance. And you *get* all three on every job Honeywell does.

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*Aeronautical Controls*

ducts carrying heated air through a rotary collector ring around the rotor hub and then through the hollow aluminum blades. It was determined that 125,000 BTU's and 1,700 pounds air flow per hour was required to handle ice prevention on the H-5.

There still remains a question as to whether an external combustion heater is the best method available but the trial installation provided very valuable data on heat requirements, heat distribution in the hollow blades, etc. While tooling required for development of a deicing system using engine exhaust gases would be quite expensive for experimental use, this may be the answer to production helicopter rotor ice protection. Using steel blades the engine exhaust gases might be ducted directly through the rotor without use of a heat exchanger.

Many turbine transport enthusiasts, not including engine manufacturers, claim that turbojet engine reliability and related maintenance and overhaul costs are the biggest factors delaying commercial use of the new type aircraft. Two General Electric Co. engineers, R. T. Holland and E. L. Auyer, had some interesting comments to offer on this and other phases of turbine engine developments.

### Jet Inspection Times

With the turbojet engine installed in the nacelle, working through inspection holes, time required for a preflight or postflight inspection is about one-third manhour per engine.

Intermediate inspections under similar conditions takes about one-half manhour per engine; removal of the engine from the nacelle requires three manhours and with the engine removed a major inspection takes about 22 manhours. Reinstallations of the engine, including check-out,

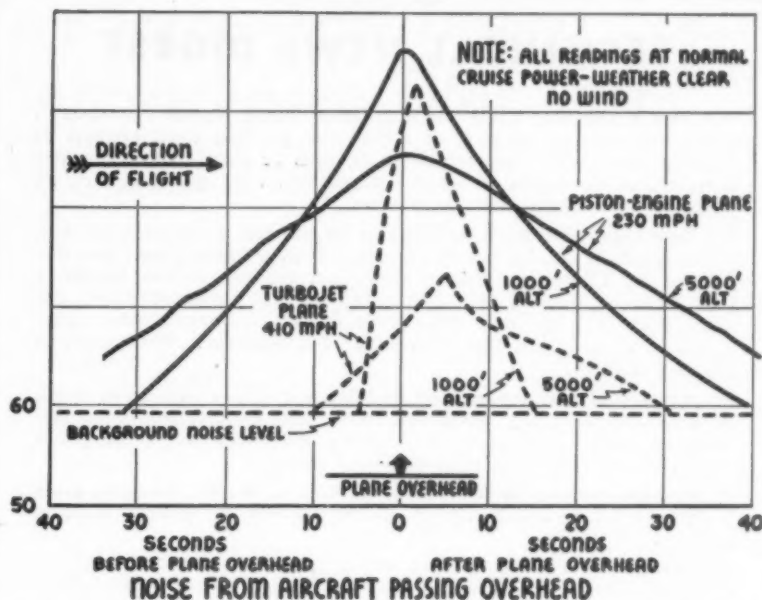
requires about four manhours. Additional service experience may improve this even further.

One of the most elusive of figures has been jet overhaul time. Holland and Auyer claimed that the General Electric TG190 requires between 280-300 manhours to overhaul. This is an all-inclusive figure covering uncrating, disassembly of engine and accessories, preliminary inspection of parts, cleaning, plating and painting, detailed parts inspection, rotor balancing, test and assembly of accessories, reassembly of engine, engine testing and preparation for shipment.

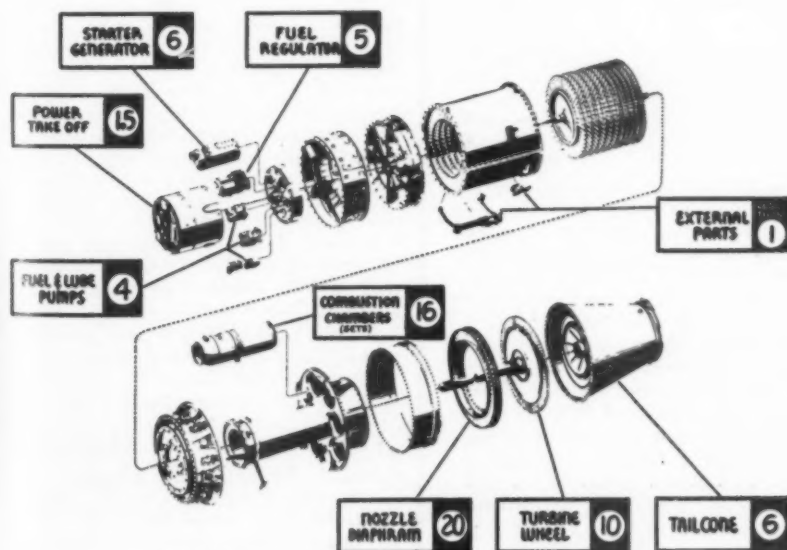
Of equal importance is the time required to replace routine parts. Assuming the engine has been removed from the nacelle, which in itself takes three manhours, the GE engineers said it takes six manhours to replace the tail-cone, 10 hours (which time includes tail-cone removal) to replace the turbine wheel; 20 manhours to replace the nozzle diaphragm; less than one manhour for miscellaneous external parts; five manhours for the fuel regulator; six manhours for the starter generator; four manhours for the fuel and lubrication pumps. Replacement of the complete set of combustion chambers runs some 16 manhours and of the power take-off one and one-half hours.

### Takeoff Power Problem

Holland and Auyer said that the civil operators will have to choose between afterburners and large en-



NOISE LEVELS associated with piston-engine and turbine-engine-powered aircraft, as compared to normal background noise, is shown in this graph with airplanes flying at 1,000- and 5,000-foot levels. Note that at both low and high altitudes the piston-engine aircraft can be heard before the turbojet, reaches a higher peak and can be heard longer.

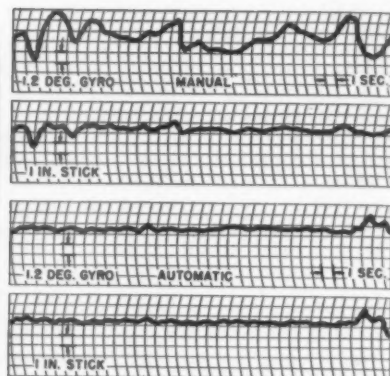


### MANHOURS REQUIRED FOR PARTS REPLACEMENT

GRAPHIC STUDY of manhours required to replace common components and accessories associated with turbine engines is shown in this chart prepared by General Electric engineers.

## TECHNICAL NEWS DIGEST

- A newly proposed Civil Air Regulation would permit operators of transport category aircraft to adjust the position light circuits to flashing rates with frequencies of 80, plus or minus 10, cycles per minute and to engage in similar experiments in operating aircraft designed to improve current systems.
- A new-type windshield, claimed to be the first electrically-heated, bullet-resistant windshield to be installed in a fighter, has been developed by Libby-Owens-Ford Glass Co. for use in the Northrop F-89 twin-jet interceptor. Laminated of six pieces of glass, the windshield features inner and outer heating elements. The outer unit acts as a deicer, the inner unit as a defogger. Windshield is 1½ inches thick.
- Trans World Airlines marked its fifth year of postwar ocean flying on February 5 having completed more than 9,000 scheduled trans-Atlantic flights. Added to its wartime operations the TWA grand total for ocean crossing exceeds 18,500 trips.
- Robinson Airlines is converting its fleet of DC-3's, changing from Wright G-102 to G-202 engines. G-102 engines are getting hard to procure.
- A session devoted to aviation safety will be featured on April 6 at the Statler Hotel in New York City as part of the four-day annual convention and exposition of the Greater New York Safety Council which opens on April 3.
- Avianca, the Colombian Airline, has awarded Lockheed Aircraft Service International a contract for major overhaul of another Douglas DC-4. Work, which includes complete fuel tank stripping and resealing, will be done at LASI's base at New York International Airport.
- British Overseas Airways Corp. reports that in four and one-half years of operation with five Lockheed Constellations it averaged six hours, three minutes daily flying time.
- With the announcement that one California Central Airlines DC-4 is participating in the Pacific air lift, the total number of carriers involved is raised to 15.
- United Air Lines has completed its 10,000th crossing of the Pacific between California and Hawaii. UAL started trans-Pacific flights in September, 1942, with the Air Transport Command, inaugurated commercial flights in May, 1947.
- Bahamas Airways has started reconversion of its Douglas DC-3's to provide for 32 passenger seats in eight rows of four each. Conversion also includes use of an integral step door and other modifications. BAL, which operates between West Palm Beach, Fla. and Nassau, plans on increasing maximum gross weight of the plane to 26,200 pounds as soon as CAA approval is obtained.
- Colonial Airlines has completed installation of omni-range receiving equipment in its entire fleet of DC-3's and DC-4's.
- A program of modernization of the University of Washington's wind tunnel is underway, financed by Boeing Airplane Co. which makes extensive use of the tunnel. Agreement provides for additional advances, as prepaid rent, up to \$20,000. Money will be used to soundproof the interior and install a new system of balances.
- The dirigible hangar at Moffet Field, Calif., which once housed the "Macon," is now being used by Seaboard & Western Airlines as a maintenance base for its Pacific air lift operations. Some 300 S&W and Lockheed Aircraft Service personnel are stationed there.
- Design and assembly of a Navy guided missile, for release from aircraft, will be handled by the U. S. Bureau of Standards at one of the war-time Navy hospital buildings at Corona, Calif. Work will start before next June and project will employ about 300 technicians.
- More than 400 men have been named members of the 27 technical committees and subcommittees of the National Advisory Committee for Aeronautics. The members, most of whom are civilians, serve in a personal and professional capacity without compensation, contributing their knowledge and counsel toward forming of research programs.



RECORDINGS of attitude and control motions such as shown here present a graphic example of the improvements in stability which can be expected with automatic-pilot-controlled flight versus manually controlled. This particular record, with the manual flight shown in the top two graphs and automatic flight in the lower two, is a comparison of the pitch characteristics in forward flight. The top line in each group shows the deviations in attitude while the bottom line shows corresponding control motions.

gines to obtain power required for takeoff. They felt that the noise, fuel consumption and complexity accompanying the use of afterburners made it desirable to use the other alternative. In addition to providing the higher power requirements of takeoff, the large engine could be cruised at a low percentage of maximum thrust and thus achieve longer engine life and greater reliability.

This improvement in engine life and related maintenance costs, combined with the relatively low noise levels of engines minus afterburners, would have to outweigh the higher weight cost of this type installation and the aerodynamic losses which would result from larger engine size. It was estimated that a 25% increase in power by use of larger engines would cost 25% in weight increase whereas a 25% power increase could be obtained from an afterburner with only a 14% increase in weight, not counting fuel weight.

Results of a survey of comparative noise levels of piston powered and turbine powered aircraft is contained in the accompanying chart.

## Rapid Temperature Changes

Rapid temperature changes, jet streams and clear air gusts were listed by United Air Lines' H. T. Harrison as major meteorological problems which face the operators of turbine-powered transports. Harrison said that from plus 115° F. to minus 115° can be expected with as much as 200° F. change taking place in 15 minutes at the speeds and altitudes

where jets will fly. The full importance of this type temperature change has yet to be evaluated.

Harrison believes that jet streams, unpredictable high-velocity streams of air encountered at 30,000-40,000-foot altitude levels, can occur anywhere over the U. S. and that these streams will be an important factor. Even without the jet streams to consider, the pilot must contend with high-velocity winds which range up to 150 mph. over some parts of the U. S. The New York-Chicago route is particularly plagued by winds of this type. Of no small concern is the 180° reversals of high-velocity winds which sometimes accompany a cold front.

British European Airways, Harrison reported, has experienced cases of clear-air turbulence in which vertical velocities up to 26 feet per second were encountered. Gusts of this velocity are considered "heavy" by the USAF. It was estimated that an airline operating 20 aircraft could expect to encounter heavy gusts once in two weeks. United Air Lines has experienced eight cases of clear-air gust in one year, all at altitudes above 15,000 feet.

This is but a small cross-section of the overall meeting papers. Others extended from subjects such as supersonic and hypersonic aerodynamics to atmospheric turbulence and electronics in aviation. Another group of papers relating to flight safety, are reviewed on page 19.

## Air Force Flight-Testing Sperry Terminal-Area DME Unit

A new type of distance measuring equipment specifically designed to meet the precision needs of the terminal area has been designed by Sperry Gyroscope Co. for the U. S. Air Force. First disclosure of the new development was contained in a paper presented before the Institute of the Aeronautical Sciences by Joseph Lyman and George B. Litchford of Sperry.

The USAF is now conducting flight tests on the system installed in a Douglas C-54 at its All Weather Flying Division, Wright-Patterson Air Force Base, Dayton, Ohio. Initial tests were made at Sperry's research center on Long Island during October, 1950.

The Sperry DME is designed for terminal-area use, that is, an area 30-50 miles around the terminal where converging aircraft from multiple airways connecting one city with many others merge. At this point precise traffic control is required and this is only possible when the exact position of the aircraft is known and its progress along a given flight path can be accurately determined.

### Pictorial Instrument

Unlike the distance measuring equipment now on order and in the

initial stages of installation by CAA, the Sperry equipment uses a pictorial-type presentation to permit the pilot simplicity of interpretation. CAA's DME, which uses a counter-type meter to show the pilot the numerical position in miles from the omni-range station, is primarily concerned with en route navigation. This does not impose the same accuracy as exists in the terminal area.

As seen by the pilot, Sperry's DME consists of a map of the terminal area printed on facsimile paper and mounted in a suitable frame (see photo). A small "crab," similar to that used with the Link trainer, travels across the map marking its route and providing the pilot with a visual indication of his planes position. Crab movement is controlled by signals from the omni-range and distance measuring equipment.

The DME involved is not the type now installed on the Federal Airways, but rather a precision-type omni designed for the terminal area by Sperry for the USAF and discussed earlier in AMERICAN AVIATION.

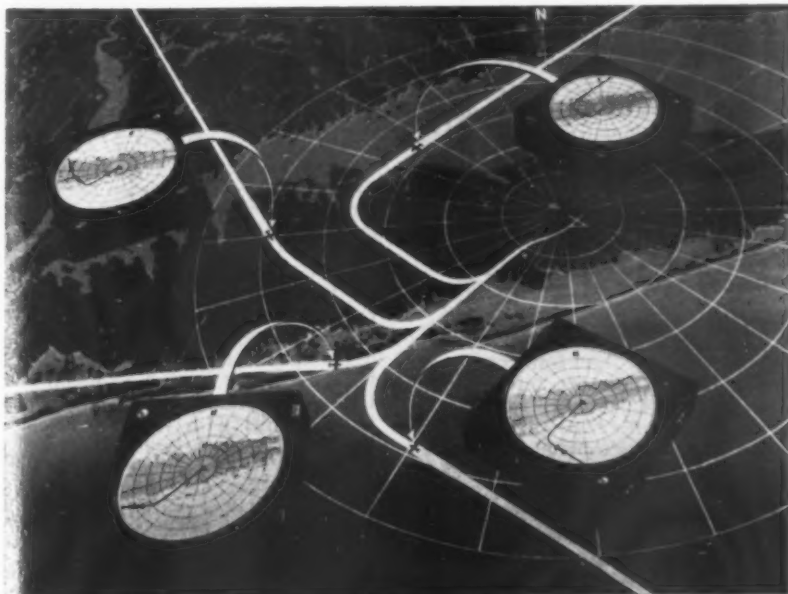
The pilot sees the plane on the DME cockpit unit as an arrow. The point of this arrow is the aircraft's position. The body of the arrow indicates the aircraft heading, and does so by its connection with the plane's Gyrosyn compass. Because the instrument presents the track made good, for ready reference with the desired track, it provides for automatic drift correction.

### Greater Accuracy

While the cockpit instrumentation is interesting, the real contribution of the new DME is its electrical circuits which promise accuracies not obtainable with comparable equipment. Until tests are further along, the Sperry engineers would not estimate accuracies which could be expected but they indicated that it would effectively serve the terminal area where they established maximum tolerances of plus or minus 25 feet in the final approach path.

The other principal claim of the Sperry engineers is that the new system will conserve radio frequencies by its ability to utilize the same radio channel as the omni-directional range and minimize airborne and ground equipment by combining the functions of DME and ODR in common transmitters and receivers.

As commonly used, DME depends on the comparison of two signals. The time interval between these signals established the distance which



OPERATIONAL USE of the Sperry pictorially presented distance measuring equipment is shown in this artist's sketch. Note that the aircraft position on each of the DME units is represented by the small black arrow. Aircraft is located at point of arrow and direction of arrow, controlled by the Gyrosyn compass, indicates aircraft heading. In moving across the map of the area the unit traces its path on the facsimile paper on which the map is printed.

# Extra Section

By William D. Perreault



**T**HE ANNUAL meetings staged by various technical societies and other aviation groups vividly illustrate one important point. A good many capable workers get so wrapped up in some detailed aspect of the industry that they ignore important developments in other fields which vitally affect their work. Once or twice a year these men come out of their shells to see what is going on. They spend sizable sums of money to attend an annual meeting covering fields related to their interest but ignore the week-to-week developments available to them through the medium of the trade paper. In a field where developments take place as rapidly as they do in aviation, no thinking man should be guilty of ignoring the impact of last week's findings on today's job.

*It's always difficult to separate facts from theory in matters of safety. On December 20 the RAF Transport Command appears to have made a useful contribution to the facts about backward-facing passenger seats. On that date a Handley Page Hastings operated by the RAF, and equipped with backward-facing seats, crashed following loss of a propeller blade and subsequent loss of the engine from vibration. In a landing made with rudder and elevators inoperative, four of the 33 on board were killed, these were all crew members. None of the passengers were seriously injured although the force of impact was so great that the remaining engines were torn loose, the plane bounced into the air once more and then came to rest after tearing off one wing. Quite a case for the backward-facing seat, we'd say.*

In a list of American companies leading in the number of patents granted during 1950 it is interesting to find that all six top companies handle a sizable amount of aviation business. They were: General Electric, International Telephone and Telegraph, Radio Corporation of America, Westinghouse, du Pont, Standard Oil and Phillips.

*What is the cost of maintaining that cabin pressurization system? At the IAS meeting in New York on January 30, TWA's R. W. Rummel said the cost of maintaining the Constellation pressurization equipment on their planes amounted to \$4.94 per hour or two cents per mile. He noted that it costs \$1,400 to overhaul the Connie compressor as compared to \$2,700 to overhaul a P&W R-2000 engine. This two cents is about 8% of the total maintenance and overhaul costs for the Constellation. Rummel said that it costs TWA \$3,000 per plane over a five-year period simply for window replacements.*

How many hours flight operation can we expect from our commercial transports? According to CAA's William T. Shuler, there are three Douglas DC-3's in airline operation with 45,861, 46,111 and 44,236 hours respectively. Top DC-4 time on record with CAA is 17,175 hours, with two others at 17,104 and 16,957 hours. Top flight hours for several other planes include 8,399 hours for a Douglas DC-6, 20,507 for a Boeing 307B, 4,039 for a Boeing 377, 25,966 for a Lockheed 18, 13,206 for a Lockheed 49, 6,132 for a Martin 2-0-2 and 4,370 for a Convair Liner. CAA estimates an active airplane will average more than 150 flying hours per month.

*CAB's recent ruling tightening up on reports of engine malfunctioning accompanied by propeller feathering reminded us of a letter we'd had from Trans-Pacific Airlines, the Aloha Airline. In four and one-half years' operations with five Douglas DC-3's, powered by P&W R-1830 engines, TPA has never had occasion to feather a propeller in flight. In this time the planes flew a total of more than 32 million passenger-miles.*

they have traveled since the speed of radio waves is known. Electrically the time is measured by comparing the phase angles of the two signals. Depending on the tone-frequency of the signals involved, the phase angle varies in proportion to the distance.

In the Sperry system, accuracy is obtained by using two distinct transmitting signal tone frequencies. By superimposing an 18,600-cycle tone frequency over a 1,000-cycle tone frequency Sperry achieved what is in effect a coarse and fine accuracy control. The 18,600-cycle tone results in a 360-degree phase angle shift (the maximum possible) for every five miles which the aircraft travels. This means that even with phase measuring equipment having considerable tolerance, accurate measurements of distances within the five-mile area are possible.

## No Ambiguity

But with this signal alone, the pilot would not be able to tell if he was 5, 10, 15, or 20 miles from the station since the signals would repeat themselves in an identical manner every five miles. The 1,000-cycle tone counteracts this. As the coarse signal it provides a 360-degree phase shift every 93 miles. Since the Sperry DME is principally concerned with the 30 mile area around the terminal no ambiguity (two identical signals at different distances from the station) exists.

Phase-measuring circuits in the DME and control servos translate the signals transmitted and received by the airborne unit into movement of the indicator so that problems worked by the DME are presented to the pilot as conclusive position reports.

Conservation of radio frequencies is obtained by having all aircraft tuned to a given station using the same radio channel as that used for the omni-directional radio range. Interference which might result from simultaneous transmissions by all the aircraft in the terminal area are effectively eliminated by controlling the time at which aircraft may transmit DME intelligence.

This is accomplished by an azimuth scanning device, similar to a rotating beam of light, which controls the time of DME transmissions. Only aircraft aligned with the radial represented by the beacon position are permitted to transmit. A complete scan is made every six seconds. To further minimize the effect of simultaneous signals interfering with one another the aircraft equipment has a memory circuit which calculates aircraft progress and when a measurement is missed this circuit automatically advances the plane. Four or five missed measurements can be tolerated without the cockpit instrument indicating this momentary loss of signal.



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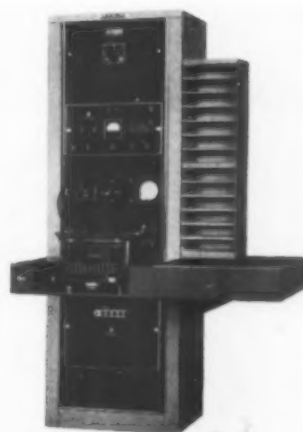
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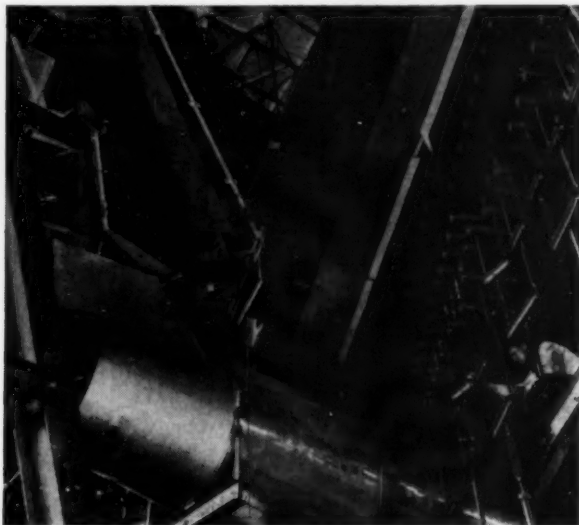
The Type 428 Packaged VHF Ground Station includes 50 watt Transmitter, Receiver, Power Supply, and Antenna.

## Boeing Tortures the Stratojet

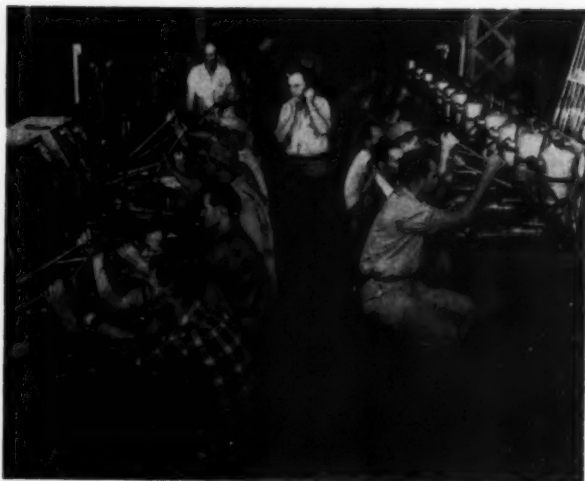
**H**OW GOOD an airplane is the Boeing B-47 Stratojet bomber? Operationally it has been proved far superior to anything flying either here or abroad. One of the production model B-47B's has been in the jigs since June, 1950, undergoing structural tests to determine how it will withstand the strains and stresses of operational life.

To accomplish these tests Boeing built a huge jig, made up of some 700,000 pounds of structural steel, in which the test airplane was supported entirely by cables attached to the fuselage, wings, and tail surfaces. Some 10,000 feet of plumbing was used to carry pressure from the hydraulic jacks to the areas under test. The program, included more than 100 tests.

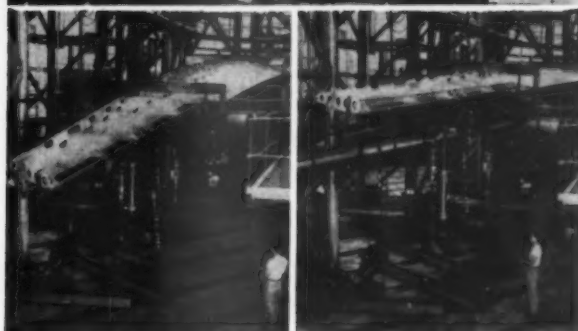
The results: the B-47B exceeds all design safety requirements. Tests developed some new information which will be incorporated in the production planes to better equip them for the higher speeds and loads which are inevitable during the bomber's service life.



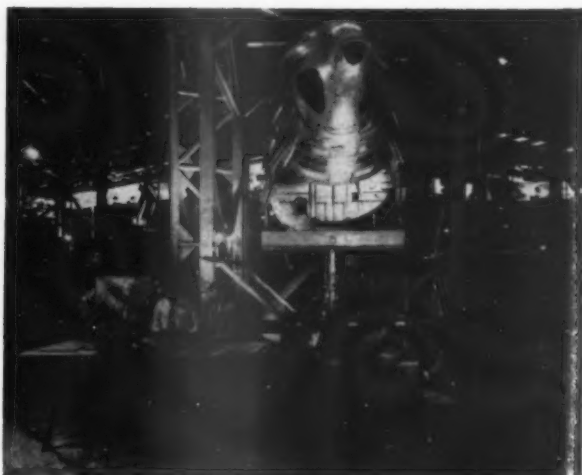
SOME IDEA of the mechanical problems of stress tests can be gained from this photo showing the I-beam eveners and hydraulically-actuated cables used to apply loads to the tail surfaces of the 185,000 pound B-47B.



HYDRAULIC pressure is used to apply the test loads to the wing and tail surfaces through the jacks and other mechanical connections. Here Boeing Engineer Leif Erickson (center) directs the application of loads.



AN ARC of more than 20 feet was traversed by the wing of the Boeing B-47B during the structural tests in which the first structural break occurred at just above 119%, 19% above the greatest stress in flight. These photos show the wing in neutral, at a six-foot deflection downward and an 11 1/2-foot deflection upward.



NEAR at hand, under the nose of the model under test, Boeing engineers record the readings from strain gages placed at critical points along the wing. The view gives an excellent impression of the mass of the test jig.

# NEW PRODUCTS

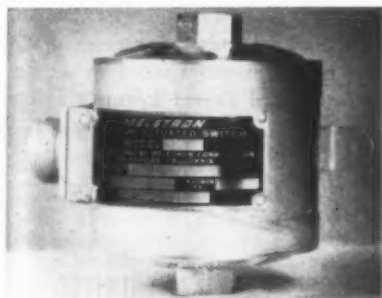
## Radio Compass

Two new dual radio compass indicators have been placed on the market by Aviation Accessories, Inc. Designated the models ADF-50 and ADF-52. The ADF-50 uses a five-inch dual indicator designed for use with red and green ADF receivers. The fluorescent dial features a red and green pointer, all cardinal points of the azimuth scale are marked with large fluorescent markers. A small knob located in the lower right corner of the indicator case rotates the azimuth scale. The knob is marked "V" for variation E-W and is used to correct the azimuth scale of the indicator to either the magnetic or true scale. The ADF-52 is a smaller version of the ADF-50 with a standard 2 1/2-inch dial size and without the rotatable azimuth scale. Both types are CAA-approved, the manufacturer states. Price \$225, FOB Ft. Worth, Texas.

When contacting Aviation Accessories, Inc., P. O. Box 4178, Fort Worth 6, Texas, please mention AMERICAN AVIATION.

## Pressure Switch

A new-model pressure switch used to control automatic selection of fuel tanks has been announced by The Meletron Corp. Said to be relatively resistant to high-frequency vibration, the model 431 switch is now used in the Northrop F-89 Scorpion. Suitable for use across fuel filters to control the alcohol deicer pump; to control fuel tank pressurization and in jet engine fuel control



systems. Manufacturer claims the model 431 is extremely rugged and sensitive. Meets AMC environmental and qualification requirements and is explosion proof.

When contacting The Meletron Corp., 90 N. Highland, Los Angeles, Calif., please mention AMERICAN AVIATION.

## Compressor

A new compressor for use in supplying air for pneumatic aircraft control system, such as gunchargers and arresting hooks, has been introduced by the Aviation Division of Walter Kidde & Co. Weighing approximately 15

pounds, the new Kidde compressor consists of a radial four-cylinder, four-stage, piston-type compressor which delivers four cubic feet of free air per minute at sea level at a pressure of

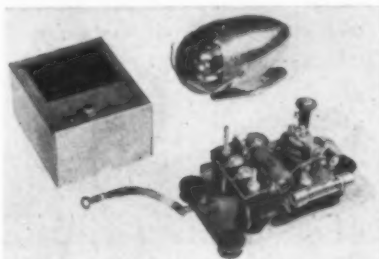


3,000 pounds per square inch. Claimed to provide greater output than any lightweight aircraft-type compressor, the new unit can be driven by an electric motor, hydraulic motor, directly from a reciprocating aircraft engine or by an air turbine in conjunction with a jet engine.

When contacting Walter Kidde & Co., 675 Main St., Belleville 9, N. J., please mention AMERICAN AVIATION.

## Flasher

A compact navigation-light flasher weighing only 13 ounces has been introduced by Van Dusen Aircraft Supplies. Adopted as standard equipment on the Cessna L-19 Army liaison plane, the Blink-R Model BR G-1 is only about one-half the size of the earlier BR-F model. Measures 3 inches by 3 1/2 inches by 2 inches. Mounting provided for with three rubber-grommeted mounting holes. Operates on 12 or 24 volts and has a capacity of 6 amperes. Produces a flashing rate between 45 and 60 cycles a minute. Fully shielded to prevent radio noise. A three-way toggle switch on the instrument panel provides the pilot with a choice of flash-



ing or steady lights. In the event of any failure of the mechanism the lights go to "steady-on."

When contacting Van Dusen Aircraft Supplies, Eastern Division, Inc., Teter-

boro Air Terminal, Teterboro, N. J., please mention AMERICAN AVIATION.

## Sandblast

A small sandblast cabinet for cleaning dies, tools, pistons, piston rings, valves and other small parts has been introduced by The W. W. Sly Manufacturing Co. It includes two light fixtures for the interior, an exhaust fan and a dust bag for dustless operation. Primarily designed for use with soft abrasives such as ground corn cobs, nut shells, etc., but usable with sand



or metal abrasives. Provided with two rubber sleeves for both arms of the operator with rubber gloves attached. Measures 14 inches by 17 inches. Requires 110-volt lighting and fan circuits and compressed-air line.

When contacting The W. W. Sly Mfg. Co., 4700 Train Ave., Cleveland 2, Ohio, please mention AMERICAN AVIATION.

## Fuel Pump

A new compact electric fuel pump for use in such applications as supplying fuel to heaters for light aircraft car-



buretion or aircraft fuel injection systems has been introduced by Bendix Aviation Corp.'s Eclipse Machine Division. Pump capacity is up to 30 gallons per hour with static pressures obtainable up to 70 pounds square inch. Two or more pumps manifolded in series or in parallel can be used to meet larger requirements. Pumping is achieved by the movement of a hollow plunger controlled by an interrupter in the electrical circuit; neither a syphon or rubber diaphragm is used. The pump, powered by a solenoid, weighs only one pound, 13 ounces, requires seven watts power for maximum fuel delivery. Production pumps are available for 6, 12, and 24 volts direct current.

When contacting Eclipse Machine Div., Bendix Aviation Corp., Elmira, N. Y., please mention AMERICAN AVIATION.



## Up to the sunshine level in 15 minutes!



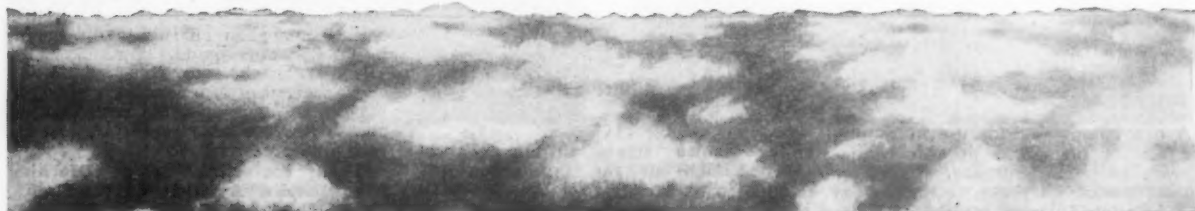
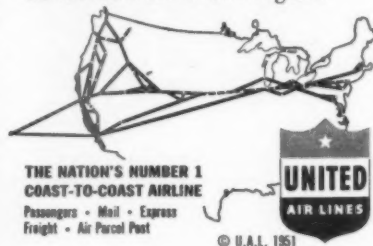
Regardless of how the weather looks from the ground, sunshine is closer than you think! Usually within 15 minutes, the four powerful engines of United's DC-6 Mainliner 300 carry you swiftly upward, through the overcast, and into the high-altitude "sunshine level."

With its pressurized cabin, which gives you low-altitude comfort, the DC-6 Mainliner 300 can cruise

above the weather, at 16,000 feet or more. New electronic aids make it possible to land or take off through overcasts that formerly closed in airports. United may also use the range and power of this great Mainliner to fly *around* the weather, on courses accurately marked by radio sound paths.

Because of this new freedom of the air, United has made record strides in all-season dependability. In fact, during the past year United

flew 98% of all scheduled miles. The cost is often less than first class surface travel today. For reservations call or write United or see an Authorized Travel Agent.



## TIME-SAVING SALES CLINCHER:

# Travel Agents Using Color Film Slides as Selling Tool

WHILE photography as a sales tool in the travel industry is hardly new—as witness the airlines' long use of appealing photographs in their general advertising, promotional literature and calendars—the use of the color slide in photographic promotion is relatively new to air travel.

One of the first airlines to extensively exploit the idea was Pan American World Airways, which introduced color slides to travel agents two years ago.

## Maintains Slide Service

Since then, Pan Am has maintained a regular slide service to 400 travel agents, issuing more than 1,000,000 individual slides depicting scenes along its worldwide routes. And the service has cost the travel agents nothing.

In addition to PAA, several other airlines have begun to use color slides as a tool of sales promotion, and several surface carriers have done likewise. The increasing popularity of slides, according to Jules Hesper, passenger agency supervisor for Pan American, is that it enables the salesman or agent to show graphically exactly what he is selling.

"Whether it's equipment, scenery or facilities to be found at the other end of the journey, the slide technique has proved effective to scores of agents," Hesper says. "Its most productive effect, possibly, is to make up the customer's mind for him."

"As every agent knows, the perennial shopper who cannot make up his mind is a great time-consumer and we have found that color slides are a quick way to influence a decision. That factor alone has produced many sales which otherwise might have been lost."

In addition to supplying agents, Pan American uses slides in all domestic offices outside of New York and in many offices abroad.

## Table Viewer Best

For office demonstration, a table viewer has been found preferable to show color to best effect. Many agents, however, use still projectors, which permit showing to larger groups outside the office.

One agent who employs both devices is Christian Schenk, who op-

erates Ridgeway Tours in Lancaster, Pa. With a library of more than 500 slides, Schenk makes outside bookings on a systematic basis, aiming the bulk of his efforts to off-seasons in order to promote business when travel normally is at low ebb.

"Slides certainly have sold business for me," he reports. "They provide a ready and intimate contact with customers and they supply the customers with something to talk about to their friends. One booking easily leads to another so that there's no problem involved as to where you are to be invited next."

As a tip to air carriers who may be considering the use of slides, this agent suggests that "creature comforts" for travelers over 40 be borne in mind.

## Emphasis on Comfort

"There is a distinct difference in tastes among age groups," he says.

"Younger groups will be interested in the recreational activities of a given tour but middle-aged and

elderly people are more interested in the comforts of their mode of travel and the comforts of the facilities they can expect at the end of their journey. These comforts are frequently overlooked by carriers and resorts, but they are definitely important."

Another agent who has found the use of slides profitable is Herbert J. Greenwald of the Greenwald Travel Service, Kingston, N. Y., who solicits large groups for showing and has a file of more than 1,500 slides from which he makes his selection. Many of these slides were made from color film he has shot himself. He also uses motion pictures, but for groups of from 25 to 50 persons he prefers slides.

"They allow me to pace my comments to audience reaction and I can stop any time or place to answer questions or expand on my remarks," he pointed out.

## Tangible Sales Result

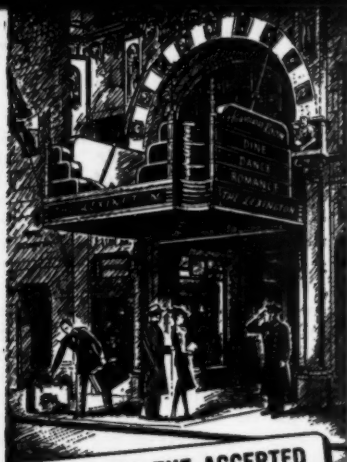
As a result of one group showing, Greenwald was able to sell one large company four tours as prizes in a sales contest.

"Slides are absolutely one of the most convincing sales mediums available," he observed. "No other method can establish such a chain reaction of successive showings and resultant sales. At least, that has been my experience."

To Robert E. Long, owner of the Travelong agency in Elizabeth, N. J., employment of this technique has en-



**Better Than Folders—** Robert E. Long (right), operator of a travel agency in Elizabeth, New Jersey, shows two prospective air travelers some attractive color slides of points they have manifested interest in visiting. He has found his library of more than 500 slides, shown above, to be a most effective sales tool.



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**"HEADQUARTERS"**  
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**VHF**  
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**Fly Directly  
In Less Time—  
Keep All Signals**

**STATIC FREE!**

Get static-free communication and the added reliability of omni range navigation by installing A.R.C.'s Type 17 2-way VHF Communication and Type 15B Omni Range Navigation Equipment. With the 15B tuned to the VHF omni stations now covering the country, you fly directly in less time. You can receive weather broadcasts simultaneously with the navigation signals—static free! The 15B takes the work out of navigation and provides long, trouble-free life. The Type 17 provides an independent communication system for use while the 15B is busy providing navigational information. Other A.R.C. equipment provides LF range and broadcast reception, and rotatable loop navigation.

All A.R.C. Airborne equipment is Type Certified by CAA. It is designed for reliability and performance—not to meet a price. Installations for both single and multi-engine planes are made only by authorized service agencies. Write for further details or name of your nearest A.R.C. representative.



**Aircraft Radio Corporation**

BOONTON, NEW JERSEY

## TRAFFIC & SALES

abled him "to sell myself and my services at the same time." He averages one outside showing a week before groups of 30 or more persons, and for several years he has lectured and shown slides on "World Travel" to an Adult Education class in Elizabeth. As a result of this activity, he has sold much tour business, "some of

which I couldn't have sold otherwise."

"Any agent who is willing to work at it will find the slide technique highly profitable," he reports.

Long agrees with Schenck and other agents that air carriers when offering slides as a sales promotion service should show interiors and the comforts they afford the traveler.

## Four Airlines Rescramble Interchange Service Picture

**I**NTERCHANGE service plans made by National Airlines and the Pan American World Airways System almost two years ago have disintegrated in the past few weeks. And in their wake have come two new alliances—one involving Pan American and Eastern Air Lines; the other, Pan American-Grace Airways and National.

Intention of each group is to operate a through interchange service between major eastern seaboard cities north of Miami and points in Latin America. But this differs greatly from the May, 1949, pact entered by National, PAA, Panagra, and W. R. Grace & Co., under which National would operate interchange services with both PAA and Panagra, and the Pan American interests would acquire 48% control of National's stock.

At that time, the proposal was advanced harmoniously by all parties as the alternative to CAB's proposed dismemberment of National. It was designed first to provide National with immediate cash and second to permit National to participate more heavily in the New York-South American passenger market.

### Value for PAA

It wasn't to be fruitless for the Pan American interests either. They would, by strengthening National financially, get a foothold in a domestic line operating a route long cherished by Pan American—that between New York and Miami. Further, through the interchange proposal, both PAA and Panagra would be able to operate their planes in the U. S. north of Miami.

Thus, on May 11, 1949, the necessary documents were filed with CAB which, in keeping with the intent of the pact, consolidated them with the National Dismemberment Case—Docket 3500. The dismemberment issues seemed to fade and all that was needed was CAB approval.

Because the proceeding was so complex and so far-reaching, however, a

final CAB decision wasn't, and still isn't, an immediate possibility. During the interim, National's once-weakened financial position grew stronger. It generated considerably more traffic. And finally, in December, 1950, G. T. Baker, NAL president, wrote PAA and Panagra advising that National was "hereby cancelling" the stock option agreements, but desired to interchange with both carriers.

As filed with CAB, the stock option and interchange agreements were interdependent. If one fell, they all fell. And so, Baker's action was interpreted by PAA as a withdrawal from the whole deal by National.

### National-Panagra Alliance

On January 22, Andrew B. Shea, president of Panagra, advised PAA President Juan T. Trippe that he felt the stock option agreements should be dropped rather than risk failure of the interchange proposals with National. Accordingly, he wrote CAB Chairman D. W. Rentzel requesting approval of the National-Panagra interchange agreement. Thus was formed the National-Panagra alliance.

Trippe's answer was an agreement with Eastern Air Lines calling for substantially the same service originally contemplated with National and arrived at one day after Shea's letter was received by Rentzel. Significantly, the PAA-Eastern agreement was left open for eventual participation by Panagra. It was submitted for CAB approval on January 30.

Simultaneously, Pan Am requested dismissal from Docket 3500 of the stock option and interchange agreements involving National "without prejudice, however, to the rights of any of the parties to damages against National by reason of National's repudiation of its agreements."

It was then clear that National and Pan American, once harmonious in their proposals, were definitely at odds on both the interchange and

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# Over the Counter

stock issues. But equally as important it became clear that a definite fight between Pan American and W. R. Grace & Co. would take place over which way Panagra should go on the interchange question.

## Joint Ownership

Under its corporate set-up, Panagra is half-owned by PAA and by Grace. Its board of eight directors is made up of four PAA men and four Grace men. Shea, its president, is one of the four representing the Grace interests. He is also a vice president of W. R. Grace & Co.

In his letter to Rentzel, Shea made it clear that the Grace interests favored an interchange with National. Proceedings had already been held before CAB on the National agreement, he said, and Panagra was desirous of getting access to the north-eastern U. S. markets as soon as possible.

But the PAA half of Panagra's board of directors, in a February 5 letter to Shea, urged acceptance of a deal with Eastern.

They told him that "we believe Panagra's aircraft can be brought into New York sooner and better by an interchange agreement with Eastern." And, referring to NAL's "cancellation" of the stock agreements, they added that "people do not generally continue doing business with those who have broken contracts with them."

## Grace Owns NAL Stock

Further, they expressed concern that Grace's support of a National deal may be motivated by its ownership of 174,000 shares of National stock held by it which represents an investment of nearly \$2,500,000. This special interest, they said, should not be a factor when the question is what is in the best interest of Panagra.

National, since its original "cancellation" action, has remained comparatively silent. However, on February 7, it announced the purchase of six new DC-6B aircraft "to provide for increases in passenger traffic" some of which is apparently anticipated from South American markets.

CAB, too, has been silent, apparently waiting for the carriers themselves to agree on what they want. Under the Act, the Board claims it has authority to compel interchange services in domestic and overseas air transportation, but there is doubt that the Board's powers extend to so-called "foreign" transportation under which the PAA-EAL and NAL-Panagra interchange operations may be categorized.

(Turn to Page 42)

## Sales Promotion

PROMOTING sales through improved passenger service is being stressed by Western Air Lines. Because written bulletins to company personnel are often ignored, WAL has substituted illustrated "Service-Grams," showing the right and wrong ways to handle passengers. Should be very effective . . . Second in a series of informative folders on major cities served by United Air Lines features Reno, Nev. Company will distribute 45,000 of them on planes and in sales offices. Folder describes local points of interest and includes a "sightseers' checklist" . . .

One of the cleverest direct mail pieces we've seen on athletic charter flights has been distributed by Capital Airlines. Cover says, "You can't beat Capital Airlines' TV (Team Volume)," and the folder claims that Capital "carries more collegiate and professional athletic teams than any other airline in the world." Inside there is a picture of a television set, and by pulling on a tab you can flash on the screen five advantages of using the airline for team travel. We understand the design was the idea of Bill Urquhart, Capital's manager of special events . . .

Dr. John H. Furbay, director of Air World Education for TWA, sends us copies of folders now being distributed on next summer's international study tours. The tours are designed to give university credit, in lieu of ordinary summer school study, to students and teachers, especially to teachers requiring credits for renewal of teaching certificates, and for salary increases. Response has been very good in spite of unsettled world conditions, he says . . . TWA, in cooperation with leading U. S. tour operators, has also developed a Thrift Tour Package containing some 40 European tours of different lengths and prices. The prices start at \$545 for a two-week all-expense tour . . .

KLM Royal Dutch Airlines is making available to groups and clubs a 15-minute, 16-mm. sound film in black and white portraying airline service. Entitled "At Your Service, Mr. Wilson," it can be borrowed from the airline, but groups must provide their own projection equipment.

## Ticket Offices

WESTERN Air Lines and American Airlines have opened a new joint downtown ticket office at 1420 Broadway, Oakland, Calif. . . . SABENA Belgian Airlines has opened its second Pacific coast office at 6022 Wilshire Blvd., Los Angeles, and has opened a Florida office at 235 Lincoln Road, Miami Beach.

## Traffic and Services

AMERICAN Airlines, in an airport notice filed with CAB, proposes to use Westchester County Airport, White Plains, N. Y., to furnish additional service to New York on routes 4, 7 and 25, effective Feb. 24. AA said use of the field will provide improved service for upper Manhattan, Bronx, Westchester and Fairfield counties. Limousine time from 42nd St. terminal is 75 minutes, compared with 45 minutes to LaGuardia, 55 to Newark and 75 to Idlewild . . . American was to inaugurate non-stop service last week between New York/Newark and Toronto . . .

Eastern Air Lines will fly two round-trips daily between New York, San Juan and Miami, using Constellations and DC-4's, when its recently awarded New York-San Juan certificate becomes effective in late March . . . Ozark Airlines has activated the St. Louis-Springfield-Joplin-Tulsa segment of its local service route, two round-trips daily with DC-3's . . .

Interline agreement signed by United Air Lines with 15 international air carriers provides that UAL passengers bound for overseas destination will not have to claim and re-check baggage at gateway cities. It also entitles passengers to through rate on baggage above the free allowance . . .

Pan American World Airways has added a third weekly round-trip between San Juan, P. R., and Port of Spain, Trinidad . . . KLM Royal Dutch Airlines has inaugurated new weekly through service from New York to Frankfurt and Munich, Germany.

—ERIC BRAMLEY

AMERICAN AVIATION



## HELPING TO BROADEN the skyways of tomorrow!

The planes of tomorrow are on the drawing boards of the aviation industry today. When they are ready to take to the air, the right fuels and lubricants will be waiting for them. This fact is assured by research projects such as those currently under way in the laboratory of the Standard Oil Company at Whiting, Indiana.

Right now, Standard offers the important fuels and lubricants that are in high favor with pilots of all types of planes. For example, for light-plane owners, there's STANDARD 80/87-octane aviation gasoline for maximum take-off power and smooth, economical cruise. For heavier aircraft, STANDARD 91/98- and 100/130-octane aviation gasolines assure top performance.

Standard Airport Dealers have these products right now. Count on them to supply your needs every time. And remember, when the planes of tomorrow come off the production line, Standard will be there with the finest products made to keep 'em flying!

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STANDARD Aviation Gasolines  
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and Hydraulic Oils  
QUAKER STATE Aero Engine Oils

**STANDARD OIL COMPANY (INDIANA)**

(Continued from Page 40)

In any event, the mother proceeding—the National Dismemberment Case—has lost none of its confusion and promises, before a final CAB decision, to become one of the Board's most controversial cases. It has resulted in a break between Pan American and National. It could result in a more serious break between Pan American and Grace.

## CAB CALENDAR

Feb. 19—(Docket 4034 et al.) Hearing in Indiana-Ohio Local Service Case. Tentative. Examiner Warren E. Baker. Postponed from January 22.

Feb. 19—(Docket 4328) Hearing in Lineas Aereas Nacionales, S. A. Colombia-Miami Foreign Permit Case. Tentative. Examiner Joseph L. Fitzmaurice.

Feb. 27—(Docket 4579) Hearing on application of Lawrence M. Coleman, d/b/a Samoan Airlines for Pago Pago-Apia Certificate. Tentative. Examiner Richard A. Walsh.

March 6—(Docket SR-7-201) Oral argument before the Board in Civil Aeronautics Administrator vs. Aviation Corporation of Seattle, d/b/a Westair Transport. 10 a. m., Room 5042, Commerce Building, Washington, D. C. Postponed from January 30.

April 2—(Docket 2849 et al.) Hearing in Big Four Mail Rate Case. Tentative. Examiner Edward T. Stodola. Postponed from March 5.

June 18—(Docket 4059 et al.) Hearing in CAB investigation of airline tariff liability rules. Tentative. Examiner R. Vernon Radcliffe. Postponed from April 19.

## U. S. Feeder Airline Revenues & Expenses for November, 1950

| AIRLINES       | TOTAL OPERATING REVENUES | PASSENGER REVENUES | M&E REVENUES | EXPRESS REVENUES | FREIGHT REVENUES | EXCESS BAGGAGE REVENUES | NON-SCHEDULED TRANSPORT REV. | TOTAL OPERATING EXPENSES | AIRCRAFT OPERATING EXPENSES | GROUND & INDIRECT EXPENSES | NET OPERATING INCOME |
|----------------|--------------------------|--------------------|--------------|------------------|------------------|-------------------------|------------------------------|--------------------------|-----------------------------|----------------------------|----------------------|
| All American   | \$ 212,557               | \$ 93,205          | \$ 113,458   | \$ 4,879         | \$ . . .         | \$ 344                  | \$ . . .                     | \$ 266,302               | \$ 126,574                  | \$ 139,728                 | \$ -53,745           |
| Bonanza        | 59,286                   | 18,996             | 38,820       | 79               | 317              | 114                     | 928                          | 78,369                   | 36,156                      | 42,213                     | -19,083              |
| Central        | 72,549                   | 10,290             | 52,059       | . . .            | . . .            | 63                      | 119                          | 87,558                   | 39,379                      | 48,179                     | -15,009              |
| Empire         | 84,840                   | 29,752             | 51,582       | 578              | . . .            | 191                     | 1,916                        | 89,264                   | 48,741                      | 40,523                     | -4,424               |
| Frontier*      | 282,022                  | 75,958             | 198,099      | 1,375            | 3,621            | 495                     | 1,918                        | 323,505                  | 154,194                     | 169,311                    | -41,483              |
| Lake Central** | 137,164                  | 14,184             | 39,542       | 2,879            | 47               | 90,511                  | 127,681                      | 73,730                   | 43,951                      | 19,483                     | 19,483               |
| NCA***         | 58,570                   | 30,324             | 25,995       | 751              | 1,141            | 201                     | 91                           | 61,435                   | 24,697                      | 39,738                     | -2,865               |
| Mid-West       | 79,502                   | 3,523              | 75,941       | . . .            | . . .            | 23                      | . . .                        | 51,922                   | 26,942                      | 24,980                     | 27,579               |
| Piedmont       | 256,495                  | 132,610            | 113,931      | 3,250            | 2,933            | 1,185                   | 1,924                        | 248,990                  | 137,340                     | 111,650                    | 7,505                |
| Pioneer        | 316,730                  | 152,290            | 100,093      | 2,140            | 3,823            | 1,042                   | 55,766                       | 276,715                  | 138,830                     | 137,885                    | 40,015               |
| Robinson       | 89,098                   | 55,512             | 28,608       | 1,581            | 1,065            | 107                     | 2,246                        | 111,553                  | 57,555                      | 53,998                     | -22,454              |
| Southern       | 163,639                  | 47,119             | 113,375      | 1,469            | . . .            | 172                     | . . .                        | 163,064                  | 85,997                      | 77,467                     | 575                  |
| Southwest      | 180,015                  | 93,253             | 75,698       | 1,230            | 3,287            | 304                     | 4,260                        | 157,269                  | 60,948                      | 96,321                     | 22,746               |
| Trans-Texas    | 207,599                  | 66,595             | 137,936      | 793              | 1,478            | 285                     | . . .                        | 214,001                  | 97,156                      | 116,845                    | -6,402               |
| West Coast     | 97,001                   | 32,867             | 61,631       | 306              | 1,135            | 130                     | . . .                        | 82,146                   | 32,197                      | 49,949                     | 14,855               |
| Wiggins        | 23,560                   | 1,517              | 22,035       | . . .            | . . .            | 8                       | . . .                        | 26,271                   | 12,282                      | 13,989                     | -2,721               |
| Wis. Central   | 134,498                  | 36,738             | 95,857       | 1,560            | . . .            | 198                     | . . .                        | 132,415                  | 61,684                      | 70,731                     | 2,084                |
| TOTALS         | 2,455,125                | 894,733            | 1,344,650    | 22,870           | 18,800           | 4,909                   | 149,679                      | 2,488,460                | 1,211,002                   | 1,277,458                  | -33,334              |
| Hel. Air Serv. | 29,834                   | . . . .            | 29,811       | . . .            | . . .            | . . .                   | . . .                        | 27,631                   | 16,847                      | 10,784                     | 2,202                |
| Los Angeles    | 28,384                   | . . . .            | 28,384       | . . .            | . . .            | . . .                   | . . .                        | 31,536                   | 19,287                      | 12,249                     | -3,152               |

\* Formerly Challenger Airlines and Monarch Air Lines. Companies have merged and are now operating under name of Frontier Airlines, Inc.  
 \*\* Formerly Turner Airlines.  
 \*\*\* Figures cover feeder segment awarded NCA by CAB in the Parks Air Lines Investigation Case.

## U. S. All-Cargo Airline Operations, July-September, 1950

| TRAFFIC   |                   |                     |                       |                   |                 |                   |                                   |   |                  |                              |                          |                             |                            |                      | REVENUES & EXPENSES |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|-------------------|---------------------|-----------------------|-------------------|-----------------|-------------------|-----------------------------------|---|------------------|------------------------------|--------------------------|-----------------------------|----------------------------|----------------------|---------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| AIRLINES  | FREIGHT TON-MILES | AVAILABLE TON-MILES | % AVAILABLE TON-MILES | REVENUE TON-MILES | SCHEDULED MILES | % SCHEDULED MILES | SCHEDULED MILES COMPLETED         | TOTAL OPERATING REVENUES  | FREIGHT REVENUES | NON-SCHEDULED TRANSPORT REV. | TOTAL OPERATING EXPENSES | AIRCRAFT OPERATING EXPENSES | GROUND & INDIRECT EXPENSES | NET OPERATING INCOME |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air News  | 39,765            | 103,922             | 38.26                 | 28,782            | 28,782          | 100.00            | July, 1950                        | \$ 19,055   | \$ 18,311        | \$ . . . .                   | \$ 14,404                | \$ 11,836                   | \$ 2,568                   | \$ 4,651             |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fly. Tiger  | 1,800,705         | 2,188,676           | 82.27                 | 314,198           | 294,933         | 94.60             | 501,329                           | 235,277   | 35,932           | 278,115                      | 162,475                  | 115,640                     | 223,213                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Slick   | 3,980,654         | 4,716,154           | 84.40                 | 833,188           | 677,155         | 81.76             | 604,746                           | 390,020   | 181,537          | 461,999                      | 270,427                  | 192,532                     | 142,787                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| US Airlines   | 244,301           | 574,095             | 42.55                 | 98,962            | 94,996          | 95.17             | 33,932                            | 22,480  | 11,400           | 65,664                       | 41,090                   | 24,574                      | -31,733                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TOTALS  | 6,065,425         | 7,582,847           | 79.99                 | 1,275,130         | 1,095,866       | 86.86             | 1,159,062                         | 666,088   | 228,869          | 820,142                      | 485,828                  | 334,314                     | 338,918                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air News  | 33,331            | 101,514             | 32.83                 | 29,004            | 29,004          | 100.00            | August, 1950                      | \$ 17,167   | \$ 17,167        | \$ . . . .                   | \$ 15,679                | \$ 13,323                   | \$ 2,356                   | \$ 2,301             |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fly. Tiger  | 2,037,194         | 2,468,526           | 82.53                 | 372,490           | 294,933         | 100.00            | 721,434                           | 280,051   | 26,095           | 326,631                      | 168,115                  | 158,516                     | 394,803                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Slick   | 4,966,889         | 5,908,615           | 84.06                 | 1,003,031         | 660,338         | 92.28             | 753,375                           | 480,873   | 221,487          | 574,314                      | 357,338                  | 216,976                     | 179,061                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| US Airlines   | 447,479           | 501,125             | 89.29                 | 100,225           | 92,400          | 81.59             | 64,884                            | 30,810  | 33,903           | 81,244                       | 49,315                   | 31,929                      | -16,359                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TOTALS  | 7,486,893         | 8,979,780           | 83.35                 | 1,504,750         | 1,077,175       | 93.68             | 1,557,674                         | 808,901   | 281,485          | 997,868                      | 588,091                  | 409,777                     | 559,806                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air News  | 32,585            | 96,719              | 33.69                 | 27,634            | 27,634          | 100.00            | September, 1950                   | Under CAB regulations the airlines are not required to file a report for revenues and expenses for the month of September, but instead file a statement for the quarter ending September. |                  |                              |                          |                             |                            |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fly. Tiger  | 1,895,442         | 2,479,538           | 76.44                 | 378,447           | 294,933         | 100.00            | 721,434                           | 280,051   | 26,095           | 326,631                      | 168,115                  | 158,516                     | 394,803                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Slick   | 4,849,291         | 5,936,734           | 81.68                 | 989,354           | 654,603         | 92.56             | 753,375                           | 480,873   | 221,487          | 574,314                      | 357,338                  | 216,976                     | 179,061                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| US Airlines   | 401,284           | 720,328             | 55.71                 | 113,432           | 98,744          | 95.30             | 64,884                            | 30,810  | 33,903           | 81,244                       | 49,315                   | 31,929                      | -16,359                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TOTALS  | 7,178,602         | 9,233,319           | 77.74                 | 1,508,867         | 1,075,914       | 95.04             | 1,557,674                         | 808,901   | 281,485          | 997,868                      | 588,091                  | 409,777                     | 559,806                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air News  | 105,681           | 302,155             | 34.97                 | 85,420            | 85,420          | 100.00            | Quarter Ending September 30, 1950 | \$ 53,968   | \$ 51,991        | \$ . . . .                   | \$ 45,562                | \$ 38,263                   | \$ 7,299                   | \$ 8,406             |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fly. Tiger  | 5,733,341         | 7,136,740           | 80.33                 | 1,065,135         | 884,799         | 98.20             | 1,603,482                         | 776,666   | 110,968          | 752,934                      | 504,760                  | 248,174                     | 850,548                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Slick   | 13,796,834        | 16,561,503          | 83.30                 | 2,825,573         | 1,992,596       | 88.79             | 2,083,832                         | 1,373,411   | 599,076          | 1,609,312                    | 943,691                  | 665,622                     | 474,520                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| US Airlines   | 1,093,064         | 1,795,548           | 60.89                 | 312,619           | 286,140         | 90.83             | 172,508                           | 78,876  | 93,261           | 238,502                      | 152,694                  | 85,808                      | -65,995                    |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TOTALS  | 20,728,920        | 25,795,946          | 80.35                 | 4,288,747         | 3,248,955       | 91.84             | 3,913,790                         | 2,280,944   | 803,305          | 2,646,310                    | 1,639,408                | 1,006,903                   | 1,267,479                  |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| * Figures for the Flying Tiger Line do not include the company's defense contract operations. |                   |                     |                       |                   |                 |                   |                                   |   |                  |                              |                          |                             |                            |                      |                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

\* Figures for the Flying Tiger Line do not include the company's defense contract operations.

## AIRLINE PEOPLE

### ADMINISTRATIVE

O. M. Mosier, C. W. Jacob and W. J. Hogan have been named as a management committee in charge of American Airlines during the three months that AA's president, C. R. Smith, is on military duty as a consultant to the under secretary of the Air Force.

Oscar A. Trippett, Los Angeles attorney for United Air Lines, has been elected president of the Los Angeles Chamber of Commerce. Terrell C. Drinkwater, president of Western Air Lines, was re-elected vice president.

Velta Bowlware, executive secretary to C. G. Adams, secretary - treasurer of Braniff Airways, recently completed her 20th year of service with the company and was presented with a diamond service award pin and a silver platter, the latter a gift of women employees of the company.



Bowlware

### OPERATIONS-MAINTENANCE

Andy Bitter, for the past two years employment supervisor for Trans World Airlines' Middle and Far East Region, has been appointed acting industrial relations supervisor for the region. He replaces C. W. Conrad, who resigned to become director of personnel for the Pressed Steel Tank Co. of Milwaukee.

Don Getchell has been promoted from superintendent of stations to assistant manager of operations for Lake Central Airlines. A 12-year veteran in air transportation, he formerly was associated with Panagra and Avianca in South America and with Northeast and Colonial Airlines.

Glen E. Smith, formerly chief engineer for The Flying Tiger Line, has been appointed superintendent of maintenance at Seaboard and Western Airlines' west coast maintenance base at Moffett Naval Air Station. He has served in maintenance capacities with Western Air Lines and American Airlines.

Thurman C. Erickson, industrial relations manager of the Pacific-Alaska Division of Pan American World Airways, has been elected president of the California Personnel Management Association.

W. G. Ledger has been promoted from flight purser instructor to superintendent of pursers for the Atlantic Region of Trans World Airlines, succeeding Walter Menke, who transferred recently to the public relations department.

Pazel White, has been appointed

FEBRUARY 19, 1951



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# Airline Commentary

By Eric Bramley



**WE** HAVE noted with much interest that Washington National Airport has installed a whole room full of pinball machines. This we applaud. If you have a weakness for these machines, like we do, you can't walk past one without trying your luck. The result is substantial revenue for the airport. **Louie Inwood**, who runs the Kansas City airport, and **Bob Aldrich**, of Twin Cities, tell us that their machines pay off handsomely. However, Washington has its machines in a room where, in our opinion, most passengers will never find them. Result is that mechanics and other airline and airport personnel are giving them a big play—and probably taking time off from work to do it. Passengers can afford nickels to pull the plunger much more than airline employees. Let's put the machines in the lobby, or at least closer to it.

At a recent TWA management club meeting, John Collings, TWA vice president-operations, was asked what the company was doing to minimize the mad scramble at airport ticket counters, and to reduce delay in obtaining baggage. His answer: "We are . . . trying another idea: Stanchions which will hold the people in line so that the man behind the counter can do an efficient job. He won't have to be answering three other people and the phone at the same time. If it works out, we will put them in at a lot of our stations."

"The baggage problem is a bad one but we have made progress. We have instructed cargo men to unload as much baggage as they can quickly and send some of it to the check rooms immediately. This gets some of the passengers on their way quickly and the rest know theirs will be along soon. It is a definite problem and my undying thanks to the person who can come up with the solution to reduce baggage handling time." We just thought you might be interested in what one airline is doing to try to solve its problems.

Mind if we reminisce for a moment? . . . It was a steamy hot 1945 evening in Calcutta. War with Japan had ended a few days before. We'd returned to India from China, where we'd been living in the muck and rain of a spot called Liuchow. Celebrated VJ Day there (we were in India and China as a war correspondent for *AMERICAN AVIATION*). Anyway, a certain general, whom we had been privileged to call a friend, invited us to his Calcutta (Hastings Mill) headquarters for dinner. We sat on the porch and had a long talk about what postwar America needed to make sure there wasn't another war. Later we wrote a story about that conversation. For policy reasons, we couldn't quote the general by name. Here's what he had to say, and we think it's interesting in view of the developments during the past five years:

"Give our airlines 3,000 airplanes in the C-54 class, or larger, and they will be able to move a compact, highly trained U. S. force, or international force, to danger spots anywhere in the world—and keep them supplied. A huge standing army will be unnecessary. It will probably be necessary to subsidize the airlines, but this should be done willingly. The expense would be infinitesimal compared to the cost of huge navies, and fleets of bombers and fighters. Of course, bombers and fighters will be necessary, but not in as large numbers as would otherwise be the case. And you can forget the Liberty ships and the troop transports. Three thousand C-54's and you've got the world by the tail. We've proved here what the airplane can do—and there's no limit to what the airplane can do."

That general, who was and is one of the most vigorous proponents of carrying and supplying armies by air, commanded the Hump operation. Later he ran the Berlin Airlift, and still later he flew anything and everything to the troops in Korea. He's now returning to the U. S. for reassignment.

His name: **Maj. Gen. William H. "Bill" Tunner**.

supervisor of stewardesses for American Airlines at Dallas, replacing **Barbara Ann Christian**, now assistant supervisor of stewardesses at Fort Worth. **Millie Alford** has moved up to supervisor of stewardesses at the latter point.

## TRAFFIC & SALES

**Marion M. Mathews** has been named



Mathews

to the newly created position of superintendent of convention sales for United Air Lines at the company's executive offices in Chicago. He joined UAL's sales department in 1946.

**Dan O'Connor** has been appointed by Guest Airways as central division traffic and sales manager, with headquarters in Miami. O'Connor has been in airline sales work for 20 years, having been associated previously with Trans World Airline since 1944 and before that with Eastern Air Lines and a predecessor company, Luddington Airlines.

**Hollis Sweat**, district traffic manager for Pan American World Airways at St. Thomas, has been shifted to Montego Bay for the winter period as traffic sales representative.

**Edwin W. Clapp**, formerly city traffic manager for Southern Airways in Atlanta, has been appointed district traffic and sales manager for the Mississippi Valley Division, with headquarters in Jackson, Miss.

**Marshall Sherman**, formerly a sales representative for United Air Lines at Portland, has succeeded **A. W. Olsen** as agency and interline representative at Honolulu. Olsen now is with the San Francisco sales staff.

**Edward C. LeShane**, assistant station manager for West Coast Airlines at Medford, Ore., for the past three years, has been promoted to station manager, succeeding **Charles A. Whillock**, resigned.

**James De Witt** has been appointed to the newly created position of chief agent, reservations and ticket offices, for American Airlines in Philadelphia.

**A. J. Ramondt**, former district sales manager for Philippine Air Lines in Hong Kong, has transferred to Tel Aviv, Israel, in the same capacity.

**John A. Atkinson** has been added to United Air Lines' Los Angeles sales force as agency representative. He formerly was in the sales and reservations department of the company's San Francisco office.

**Blanche Arp**, formerly with Trans World Airlines' sales staff in San Francisco, has joined the Los Angeles office as sales representative.

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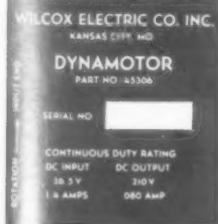
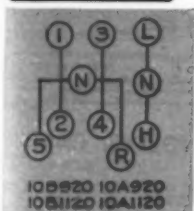
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# Washington's Fee Revisions Foreshadow Regular Profits

By KEITH SAUNDERS

**A**RARITY among Federal agencies and facilities, Washington National Airport during this fiscal year will draw appropriations totaling about one and one-quarter million dollars from Congress and will return to the Treasury an amount slightly in excess of that.

It wasn't always thus, for the airport's books have shown red ink in the past (there was a net loss of \$27,946 last fiscal year), but WNA has never been far from breaking even and is now moving over solidly into the black.

In fact, Bennett H. Griffin, administrator of the airport, is confident that the new contracts signed recently with tenants and concessionaires will allow the airport not only to meet all operating and maintenance costs but also to return amortization and interest on the capitalized investment.



Griffin

Responsible for WNA's improved financial picture, at a time when many major air terminals are still operating at a deficit, are:

- Increased landing fees.
- Increased rentals.
- Increased food sales.
- Increased utilities sales.

Here's how the airport manage-

ment sizes up the effect these and related factors will have on airport income:

**Landing area:** This area, under the airport's cost accounting system, showed a net loss of \$42,245 last fiscal year, when landing fees yielded only about \$6,000 a month. The new rates, set up on the basis of so much per revenue trip arrival, will yield an estimated \$122,500 this fiscal year and about \$195,000 next year. Also there will be an estimated yield of \$40,000 a year from the ramp service charge of 65c per revenue trip. The fueling concession and lease of the airport fuel distribution system to Allied Aviation Fueling, Inc., will bring in another \$80,000 a year, it is estimated.

**Terminal area:** This area showed a loss of \$154,269 last year, but this included \$41,374 for amortization and interest on the terminal building and it is CAA policy not to amortize this building because it serves the dual purpose of being a model for terminal building construction elsewhere and being a sort of showplace with an appearance and dignity befitting the air gateway to the nation's capital.

Omitting amortization and interest, the deficit in the terminal area last year was \$112,895. The investment in hangars and other physical facilities on the airport was amortized, just as they are on any other well-run airport.

An increase in the rate for space occupied by the airlines, an additional \$12,000 or more a year from

the in-flight meal concession, an additional \$36,000 from new concession space in the recently completed south wing of the terminal, and payments from the Post Office Department for the space it occupies in the new wing should add up to an increase of \$118,000 over last year's terminal area revenues and thus put the area in the black.

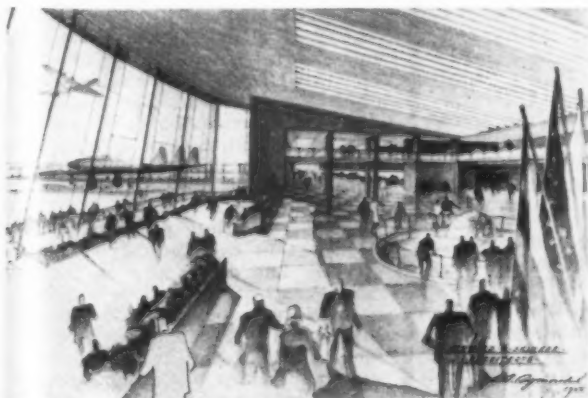
**Hangar area:** This area showed a net loss of \$61,878 last fiscal year, but increased revenue from the hangar cafeteria plus fuller utilization of available hangar space are expected to put the area in the profit column this year. Instead of the \$348,170 received last fiscal year, hangar rentals are expected to go up to about \$380,000 this year. There are prospects of leasing Hangar 10, now used for storage of CAA maintenance equipment, and Hangar 6, now leased to an airline at a low figure, to concession-type lessees at a higher yield.

**Other areas:** It is held doubtful that the miscellaneous areas which include the landscaped approaches to the airport, roadway maintenance, lighting and attendants costs, will ever be self-sustaining, but a proposed parking concession is expected to cut last year's \$88,000 loss almost in half.

Total revenues of WNA for this fiscal year are estimated at \$1,351,350, which will be more than \$50,000 in excess of the amounts appropriated by Congress for operation and maintenance of the airport during the 12 months ending next June 30.

## Follows Current Trend

In upping the airport's rates and charges, which in turn has boosted its revenues, "Benny" Griffin and his associates did only what several other major airports have done in the past year, but the manner in



**Miami Terminal Proposal**—Architects' drawings of proposed \$13,000,000 terminal building for Miami International Airport show curved control tower on roof, ramp to planes and part of observation window (right).



and interior of observation platform and main lobby (left). Construction of first unit of the building, costing \$2,500,000 to \$3,000,000, is to be started this year, barring all-out war. Architects are Steward & Skinner, Miami.

## AIRPORT NEWS DIGEST

**Airport Profits:** Reports trickling in from various sections of the country indicate that 1950 was a good year financially for many airports. Chances are that more municipal airports finished the year in the black than ever before.

An outstanding example was Tucson Municipal, which, according to **Bob Schmidt**, manager, "has completely wiped out its pioneering losses and indebtedness just two years and three months after taking over what local newspapers then described as the city's (4,195-acre) white elephant."

Not only has the deficit which once totaled more than \$23,000 been erased, Schmidt reports, but the Airport Authority has retired its deferred obligations by paying a \$10,000 bank loan and refunding in entirety \$22,000 in bonds sold in 1948 and 1949 which were scheduled to mature in 1953. In addition, the Airport Authority is making available out of income the sum of \$250,000 to provide for occupants displaced by reason of Grand Central Aircraft's expansion and for airport improvement generally.

Elsewhere, Cochran Field, Macon, Ga., made a net profit of \$27,000 in 1950 on revenues of \$109,000. The profit will be applied to the airport's cumulative indebtedness of \$54,000. Ft. Smith, Arkansas, has reported a profit of \$3,000 on its municipal airport last year. Washington National is in the black (see story, page 47) for this fiscal year. And there will be many others.

### TERMINALS

- **The new freight terminal building at Los Angeles International Airport** was to have been completed last week-end, with all but 1,800 of the 20,000 sq. ft. of available space already leased at \$2 per sq. ft. annually.
- **It is planned to start first-phase construction** within 30 days on Houston's \$2,800,000 terminal building project.
- **Paducah (Ky.) Airport Corporation** has let contracts for designing \$200,000 terminal building and related facilities at Barkley Field. Bids will be advertised about June 1.
- **Plans for \$600,000 administration building** at Rochester (N. Y.) Municipal have been completed by the architects and contract is to be awarded in about 60 days.

### AIRPORT PLANNING, SURVEYS

- **A report prepared by Airways Engineering, Inc.**, stated that the present Toledo airport is inadequate and cannot be expanded economically. Consultants recommended construction of a new airport.
- **City of Portsmouth, Ohio**, has contracted with a consulting firm to make a survey for a new airport for the city.
- **Leigh Fisher, airport consultant**, has advised Amarillo city commissioners the city would not be justified in constructing a new terminal building which would take two years to build and cost about \$600,000. He suggested complete remodeling of present terminal with a small addition.
- **Charlotte, N. C.**, city council has officially approved plans for an airport improvement program to cost nearly a million dollars, including a \$450,000 terminal.

### LIGHTING

- **New lights on two of three runways at Sioux City Municipal** are now in use, and high intensity lights on NW-SE instrument runway will be ready for use next month.

### MISCELLANEOUS

- **Chicago city council** has been asked to boost the rate charged for space used by five nonscheduled air carriers in old administration building at Midway Airport from present \$2 per sq. ft. to \$20 per sq. ft.
- **Documents have been prepared for turning over** Johnstown (Pa.) Municipal to the Johnstown-Cambria County Airport Authority.
- **Cincinnati officials are debating whether to buy** any more land for proposed Blue Ash Airport in view of defeat of the airport bond issue in last election. Issuance of county revenue bonds is one avenue being explored.

—KEITH SAUNDERS

which they did this was a little out of the ordinary.

For one thing, it entailed the breaking up of two long-held monopolies on the airport—the fuel concession and the food concession. It also:

Involved the purchase by the airport of the fuel distribution system and the substitution of a new distribution operation which is expected to lower the price to the consumer and at the same time result in a higher volume of aviation fuel sales.

It saw the food concession, including in-flight meals, split between two firms with a higher overall yield to the airport.

It saw landing fee revenues boosted nearly 200% under an entirely new system of charges.

And it saw rentals on terminal area space increased.

Such widespread changes might have been expected to cause dissension and dissatisfaction among the airlines, the concessionaires and other airport users, but they actually were accomplished with a minimum of criticism and complaint.

This was due to several factors, chief of which were:

- **Washington's use charges** had been lower than those of most major airports, and even with the increases it is not in the category of a high-cost station.

- **"Benny" Griffin** has had 34 years in aviation, speaks a language which aviation people fully understand, and has a good knowledge of business as well as of government.

- **WNA's administration** is acknowledgedly efficient and honest, its books are open for inspection, and the new rates and charges could be justified under the cost accounting system developed four years ago under the direction of David A. Robb, executive officer of the business administration division of the airport.

### Model Accounting System

This system, incidentally, has been hailed as a model in the airport field and has been widely studied and copied. It enables the management at all times to have a clear picture of costs and revenues on every part of the airport and thus be able to take steps to bring the two into balance when expenses rise above revenues in a given area.

Washington National Airport, located within the Commonwealth of Virginia but designated by Act of Congress as a Federal reservation, is a small but virtually self-sufficient city, which has to meet the needs of some 1,500,000 airline passengers a year, and which has a population of some 8,000, of whom more than 500 are employed by the airport and the remainder by the airlines and other tenants and government agencies.

The airport administrator, who in



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## AIRPORTS

### Passenger Volume at Washington National (1941-1950)

| Calendar Year | Enplaning | Deplaning | Total     |
|---------------|-----------|-----------|-----------|
| 1941*         | 176,965   | 167,292   | 344,257   |
| 1942          | 236,046   | 223,350   | 459,396   |
| 1943          | 187,260   | 173,303   | 360,563   |
| 1944          | 284,494   | 272,651   | 557,145   |
| 1945          | 382,905   | 373,632   | 756,537   |
| 1946          | 641,965   | 588,515   | 1,230,480 |
| 1947          | 593,381   | 547,564   | 1,140,945 |
| 1948          | 596,796   | 589,880   | 1,186,676 |
| 1949          | 700,243   | 686,644   | 1,386,887 |
| 1950          | 821,987   | 807,726   | 1,629,713 |
| Totals        | 4,622,042 | 4,430,557 | 9,052,599 |

\* June 16-Dec. 31.

turn is responsible to the Civil Aeronautics Administrator and the Secretary of Commerce, is in effect mayor and city manager of the reservation, responsible for the following functions, among others:

1. A first-aid room and dispensary to serve passengers, transient visitors and airport employees.

2. A fire and crash emergency set-up comprising 30 men, five pieces of mobile equipment, an alarm relay system, sprinkler systems and hydrants.

3. A police force of 25 men and radio-equipped squad cars.

4. A construction and maintenance branch continuously employed in the repair and maintenance of structures, runways and roadways on the 729-acre reservation.

5. A shop for maintaining and servicing the motor scooters, snow

plows, rollers and other mobile equipment.

6. An electrical branch which installs and maintains interior and exterior lighting systems and electric fixtures, public address systems and radio equipment, runway and taxi markers, boundary lights and beacons.

7. A janitorial branch consisting of 35 laborers and charwomen.

8. A utilities branch which (a.) installs and maintains heating equipment, water lines, sewage disposal systems, steam lines and pumping devices; (b.) operates a central heating plant to provide steam and hot water 24 hours a day to all buildings on the reservation, and (c.) operates air conditioning equipment to cool the terminal building in summer and to supply service pits on the ramp.

9. A business administration divi-

sion to keep the airport's records and accounts, work up its annual budgets, handle payroll and personnel matters, provide 24-hour central switchboard and information service, and procure required supplies and materials.

All in all, the running of Washington National Airport is a big operation, and Griffin and his assistants, notably Paul Steiner and Dave Robb, are generally credited with having gone a long way toward accomplishment of their primary objective, which is "to operate a self-sustaining model airport, providing the maximum of service at the least cost, that reflects credit on the Civil Aeronautics Administration."

### Civil-Military Coordination Assigned Airport Use Panel

The promotion of coordination and cooperation between civil airport operators and military users was turned over on February 8 to the newly created Airport Use Panel, a permanent committee composed of representatives from the CAA, CAB, Civilian Components Board, Air Force, Navy and industry.

The new group, which supplants the military-civil Airport Use Committee, will function as an advisor to the Air Coordinating Committee in screening airport construction and improvement projects to see that they:

(1) are needed by or will be useful to the military during the period of the national emergency;

(2) will be useful to civil aviation after the emergency is ended; and

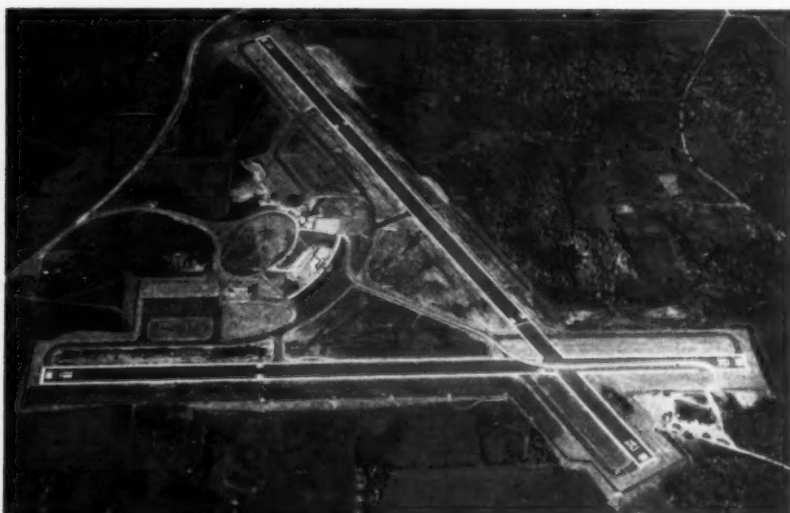
(3) will be located in areas of large population so that they will serve large numbers of air reservists during peacetime.

The Panel also will advise on such matters as lease agreements with municipalities, joint use of airports and facilities by military and civil aviation interests, and avoidance of duplication and interference.

The Panel was created at the suggestion of the National Security Resources Board's Task Group D, and the latter's recommendations will constitute the base for much of the Panel's work. The Task Group, headed by A. B. Curry, of Miami, made the following recommendations:

#### Would Speed Improvements

• That (a) airport development and improvement should proceed immediately at key civil airports in order that all deficiencies pertaining to landing areas and landing aids be acted upon at the utmost speed, and (b) projects for such developments



**New Airport**—Aerial view of new multi-million-dollar Broome County Airport on Mt. Ettrick, N. Y., shows V-shaped runway pattern, with administration building site between the open ends. Instrument (NW-SE) runway is 5,600 feet long, and E-W runway is 5,000 feet. Airport, to be dedicated Memorial Day, will serve Binghamton-Johnson City-Endicott.

## AIRPORTS

and improvements be reviewed by the panel.

- That CAA establish and recommend inventory control levels over critical items for civil airports as related to national defense needs, and that Federal assistance be given to those airports in obtaining priorities for necessary materials.

- That a military department's share for airport construction at certain civil airports should, where the best interest of the government will be served, be accomplished through the transfer of military funds to the CAA for administration by CAA to accomplish the desired improvements.

### Sharing of Costs

- That except as otherwise provided by Federal statutes or existing agreement, the Federal government should pay a fair and proportionate share of maintenance and operation costs for the joint use of civil airport facilities and should pay all such costs on solely occupied facilities, i.e., national defense should not be supported by any local community, nor should any local community make a profit because of the national defense effort.

- That all military occupancy and usage of civil facilities should be accomplished on a lessee-lessor arrangement with the owning agency of the airport, except where title in whole or part is in the Federal government. Further recommended that standard leasing arrangements be used by all branches of the armed services.

- That immediate steps be taken by CAA to require owning agencies of selected civil airports to establish a cost accounting system which would be mutually advantageous to them and to military and civil users in negotiations for use of the airport.

### Airport Security

- That a national policy covering methods and procedures for the security of airports be established by the Panel with the technical assistance of the affected agencies.

- That NSRB direct the attention of all agencies concerned with surface planning and facility development to the requirement that effective connections with airports be provided.

- That CAA in directing and approving airport master plans should request local political subdivisions to plan their airport facilities so as to facilitate the interchange if peak loads between air and surface carriers.

- That local political subdivisions

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# Training Needs May Alter Military Attitude on CPT

By BARBARA J. WARD

**A**LTHOUGH two bills now in Congress to establish a civilian airman training program are receiving no support from the military services, the situation may reverse itself as it did in World War II under the pressure of greatly expanding training needs.

When the Civilian Pilot Training Program was established in 1939, the Army Air Force and the Navy expressed little enthusiasm for its military training value. And as late as 1942, the Army announced that it would cut its trainees under the program from 40,000 to about 13,000 students.

Yet, before the end of 1942, the Army and Navy were aligned with President Roosevelt in supporting the program to the tune of \$64,000,000 in Congressional appropriation requests. And they subsequently supported the then War Training Service from their own working funds with \$32,000,000 in fiscal 1943 and \$64,000,000 in fiscal 1944.

## Services Reverse Stand

Congress had appropriated \$72,000,000 supplemented by \$3,715,000 special funds for WTS in fiscal 1943 and only \$29,400,000 supplemented by \$3,715,000 special funds in fiscal 1944. In a period of two years, the military services had entirely changed their evaluation of the program.

The case for a civilian airman training program has been summed up by John T. Griffin, president of National Aviation Trades Association. Speaking before the Minnesota Airport Operators Association in Minneapolis, Minn., on February 7, he advocated a long-range civilian airman training program to provide an emergency reservoir of air-indoctrinated personnel.

A tremendous training job had to be done on short notice in World War II, Griffin pointed out. By the end of 1942 some 266,000 Air Force mechanics had been trained and by the end of 1944 a total of 997,000 mechanics had been trained. "Whereas we had only 9,000 pilots under instruction in 1941, by the end of 1943 we had 25,000 men learning to fly. By the end of 1944, we had graduated 226,000 pilots."

The scale of World War II training contrasts with the present national emergency in which he esti-

mated the Air Force will not have trained over 60,000 mechanics and about 2,000 pilots this year. He termed the training policy one of "accelerated training, pursued only to the extent that the immediate emergency requires."

## Training Acceleration

Training, he stated, can be accelerated; but experience is directly keyed to the calendar. While he estimated that 30% of the job of making a good pilot is teaching him to handle the airplane, 70% consists in teaching him to think, to appraise situations and to exercise judgment.

The use of lightplanes in civilian flight schools may present the economical solution. The facilities are available: in the combined CPT and WTS training programs of 1940-1944, a total of 435,165 pilots received training at a cost of \$273,000,000.

If a permanent training program is established, Griffin estimated that civilian flight schools can give each potential air cadet approximately 200

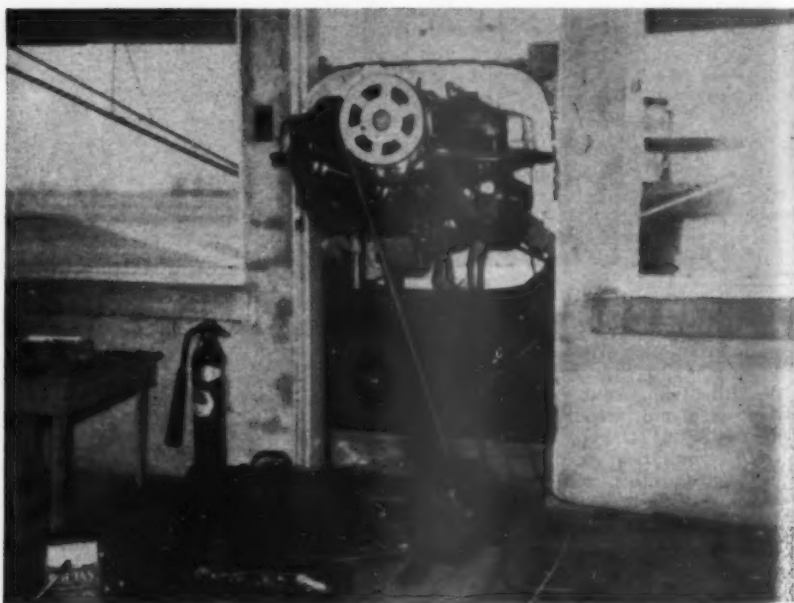
hours of flying experience at a cost of less than \$2,500 per student. During this training period, the Air Force would not have expenses for housing and caring for the student as is true of the present USAF training program which has an estimated cost of \$35,000 per pilot graduate.

While some observers believe it is extremely doubtful that the Air Force would accept the proposed 200 hours of civilian air training, the Air Force might agree that up to 50 hours of training in light aircraft is desirable for its flight cadets. The Air ROTC Bill (H. R. 1775) introduced in Congress January 19, would authorize the Air Force to contract with civilian aviation schools or educational institutions to conduct flying instruction for college members of the Reserve Officers Training Corps who would, after graduation, become Air Force pilot cadets. This training would only be conducted adjacent to the approximately 125 colleges and universities having Air ROTC units.

## ROTC Units Growing

The Air Force has just announced that it will increase its number of Air ROTC units to a total of 187 by September, 1951. This greatly increases the flight training potential which may be authorized under the Air ROTC Bill.

(Turn to Page 56)



**Office Nose Hangar—** With weather outside at zero and no heated shop in which to work, Charles L. Fower of Fower Airport, Macon, Mo., removed the office door, pushed the nose of the plane in and lifted the tail of the plane on a truck. After the engine was overhauled, a 10-inch V pulley was attached to the end of the crankshaft and connected with a three-inch pulley on a 1½-hp motor to give the engine its ten-hour run-in.

# THE Washington View

By Barbara Ward



**A** PRIORITY policy for private aviation will be forthcoming soon. Some time ago, Aircraft Industries Association asked the Air Coordinating Committee to assign non-airline aircraft a priority rating and backed the request with information showing their essential role in civilian life. ACC in turn requested the Civil Aeronautics Administration to prepare recommendations and the report is being completed for presentation at the ACC meeting this week.

The report will recommend priority assistance in maintaining aircraft which are used in listed "essential activities," such as crop dusting, executive transportation by industry-owned aircraft, and some types of charter flying. And it will set a Defense Order priority allotment for production of new planes to replace those that wear out.

CAA personnel responsible for drawing up the report have consulted with civilian representatives of the private flying committees of the National Security Resources Board and have followed much of the basic thinking of the Civil Air Mobilization Plan drafted by the aviation associations and completed by CAA's Aviation Development Advisory Committee. With the priority yardstick, it will at last be possible to measure off the extent of non-airline aviation activity which can continue in the year ahead.

*From the viewpoint of national preparedness, the greatest point in favor of the proposed "Airman Training Amendment to the CAA Act of 1938" (S. 507) is that it would give CAA the legal authority to conduct civilian training programs for pilots, radiomen, maintenance men and other technicians at any time when such training appears necessary. The machinery would be ready; all that would be needed to start the training wheels turning would be appropriations.*

*And obtaining an appropriation takes far less time than writing a new piece of legislation. In an emergency, civilian flight and ground schools could be converted almost overnight to courses which would train men to meet the air needs of the country—needs which cannot always be predicted ahead of time.*

*The bill is now in the Senate Interstate and Foreign Commerce Committee. It has backing of men both in and out of the government who are deeply concerned that this country shall be equipped to meet the aviation needs of the future.*

Airplane owners are tying themselves in knots over CAA's announcement that as of July, 1952, miles-per-hour shall become nautical. Reason receiving widest circulation has been that knots, or nautical mph, have been accepted by the International Civil Aviation Organization (ICAO) and, as loyal internationalists, we got to use them, too. Operators who feel there are reasonable limits to internationalism are saying, "It's just to make us spend more money and learn something new."

Not so. In 1946 the U. S. military forces, including the Air Force, adopted knots for all aviation operations. The decision to use nautical miles (one of which equals 1° of the earth's surface at the equator) resulted from its giving a more maneuverable fraction than mph in computing navigation, and from the necessity to settle on one standard measurement for use in DME and other equipment which will become a part of the common navigation system. In the long run standardization will simplify matters.

*Personal aircraft sales took an uptrend in 1950 for the first time since 1946. Sales of personal planes in 1949 totaled 3,362 compared with about 3,386 for 1950. And the planes are being put to work. CAA figures show 48,010 lightplanes used in industries other than aviation itself. Some 10,500 planes are owned by farmers and ranchers. Under normal conditions of materials supply, sales should continue up in 1951.*

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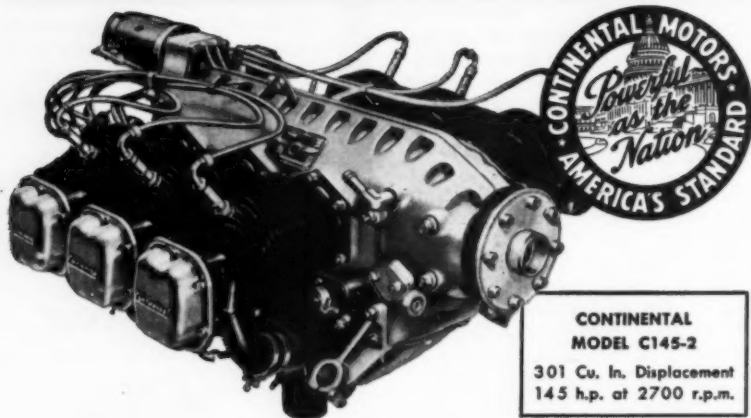
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## LOCAL OPERATIONS

(Continued from Page 54)

The greatest economy in a civilian pilot training program might be realized from its screening value. Griffin pointed out that of the students in three World War II pilot classes, only 4% of those who had 200 hours of prior pilot training were eliminated; only 5% of those holding private pilot licenses were eliminated; and only 9% of those who had previously soloed were eliminated. But 49% of those who had never been in an airplane before were eliminated. Unquestionably, Griffin stated, civilian school screening will eliminate most of these washouts and do it at an expenditure of less than \$1,000 per student.

## Maine Bill Proposes Police Power for Aero Commission

Legislation to broaden the authority of State Aeronautics Commissions has been introduced in two states. In Maine, Rep. William A. Perry (Rep.), Augusta airport operator and president of the Maine Aviation Trades Association, has proposed legislation to empower the Maine aeronautics director and his inspectors to make arrests in the state for violation of the aviation laws.

In addition, Perry proposed bills to declare abandoned airfields whose markers and wind indicators are not removed to be public nuisances, and to require non-resident registration fees of \$25 for aircraft owners and \$15 for pilots.

This would tax non-resident operators who conduct crop spraying, passenger and charter air services in Maine. At present, resident and non-resident aircraft owners pay \$1 for Maine registration.

In California, Assemblyman Stanley has introduced a bill providing that the State Aeronautics Commission coordinate activity of civil aircraft in disasters or emergencies. A second bill introduced by Stanley would enable counties to accumulate for up to five years the money derived from aircraft taxation for airport development work.

## CAA Airworthiness Directives

Cessna 190 and 195 aircraft up to and including serial No. 7586 must undergo inspection of rudder cables for fraying at the forward pulley each 100 hours until the next larger size pulleys and inspection openings are installed (contained in Cessna Service Kit 9050-1). Required by Airworthiness Directives 50-39-1 and 50-50.



# Cross-Country

----- WITH LOCAL OPERATORS -----

By Page Shamburger

**FLORIDA**—Johnny and Les Roberts of the Roberts Brothers Flying Service on Lodwick Field in Lakeland have spent a lot of money and time with direct-mail advertising. They have a bundle plan . . . "You can learn to fly for \$95." And they planned to give a money-back guarantee for all courses through a private ticket, with a payment plan. Leaflets explaining all of the courses were sent to 300 good prospects in the surrounding territory, and not one answered! Makes you know that some of the operators are not just sitting waiting for government programs.

Frank K. Hart, genial manager of Ridge Aero Service in Lake Wales has a novel idea. It's a combination budget plan for private plane owners including (1) hangar storage, (2) all maintenance, excluding parts, and major repairs, (3) 25 gallons of gas, (4) airplane washed, (5) log books kept up to date for \$35 a month for Cessnas, T-Crafts, etc. It's \$40 a month for Stearmans, Stinsons, and \$45 for Bonanzas, Navions and that size. It's an idea for some other operators, too. Frank's decorated his lounge and has a beautiful airport with a perfect location . . . near the Singing Tower and other scenic sights of Florida.

Barlow Airport is storing Horton's Wingless Airplane, and looking at it, I, too, wonder . . . will it fly? Wallace R. Johnson of Winter Haven and William E. Horton have spent a lot of time and effort in trying to perfect the idea of sealer walls and perhaps it will be the plane of the future.



Bill Laney, manager, Gulf Airmotive, Bradenton Airport, Fla.

Gulf Airmotive on Bradenton Airport is the home of another A & E school. Bill Laney, manager, is a likeable guy who says the flight school of Gulf is not too busy, but he has about 50 enrolled in the A & E division, which was started on January 1, 1948. Bradenton is a smooth sod field close to town.

Wokey Walker of Clearwater Flying Club on Clearwater Municipal says most

of the revenue on his airport is from manufacture of aluminum chairs and window screens. Soon, though, that will be out, because of the shortages. Tokey and his partners went into the aviation business to stay and will, too.



Ben Bradley, Jr., manager, Broward Airport, Ft. Lauderdale, Fla.

For the years after the war, one of them was on the road all the time selling aviation and Luscombes. (They're distributors.) They sold between 50 and 60 airplanes a year until Luscombe went out. It's slim pickings, now, though they sell Luscombe parts and Continental engines parts.

Red Hederman of Tropical on Whitted Airport in St. Petersburg has been in this private flying biz since 1920. He's got a bunch of red trimmed Luscombes which are the mode of instruction for GPs. Yes, he still has the approvals coming in and is doing a bang-up job training them. Red has been advertising in the St. Pete newspaper and thinks he gets some benefit from it.

St. Pete has the most unusual airport yet seen. It's within two blocks of the main part of town, . . . a miracle in itself, and the only hangars on the field are leased to U. S. Flying, though there are three other operators. The other operators store with U. S. and buy gas from them. Quite unusual, too, the other operators have only operations shacks on the airport proper. Tropical's office is across the road!

U. S.'s George Rifley, a most likeable fellow and one of the original air mail pilots, tells of the 430 students in the combination A & E school. That biz is mighty good, I'd say. George has



Charles F. (Pete) Smith, manager, Tamiami Airport, Miami, Fla.

the scrapbook filled with photos of Tony Janus who flew the first commercial airline in the United States. This trip was made to St. Pete on January 1, 1914.

Len Hermann of General School of Aviation in Tampa says charter is bum, except during the season when he hops a few tarpon fishermen to Boca Grande. Boca Grande is really the home of the big ones, so he says, and the flying great fun . . . it's 90 miles south of Tampa and a golf course is the place to land. Len says to just look for the dog-leg hole and land there. Without a doubt, he does the strangest kind of advertising yet heard. Owning a stock car and keeping it racing has cost him about \$1,000, but Len knows he's getting results . . . besides, he like stock car racing! Len's motto, "Late to Bed, Early to Rise, Work like Hell, and Advertise."

♦ ♦ ♦

Jack Moore of Moore's Flying Service on Pinellas County Airport just outside of St. Petersburg is still counting on GPs for his main revenue. Private flying should and will be able to stand on its own feet, says Jack, but it's a discouraging job to try to sell it, now. He's got 15 privately owned planes on the field and says they fly quite a bit.



Wally Schanz, state aviation supervisor, Florida Improvement Commission.

Dave Skelton of Aircro on Peter O'Knight Airport in Tampa does not put the blame for the decreasing private flying on anything but some of the operators. He even admits perhaps he could have done and should do more. As he says, the guys selling refrigerators or cars don't sit in their offices and wait for a customer and neither should the guys selling aviation. He's got a point, too, in the fact that we sell aviation to each other instead of going down town to sell it. Dave thinks all operators have got to start selling aviation to the men in business who have the finances to own and maintain an aircraft. Aircro advertises and has spread into an A & E school. Doing more than ok, too, with 80 students enrolled and jobs waiting for all of them.

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**UNITED AIR LINES**

## Aviation Executives Club Names O'Connell President

Joseph J. O'Connell, Jr., former chairman of the Civil Aeronautics Board and now a Washington lawyer, has been named president of the newly formed Aviation Executives Club of Washington. A. R. Christie of United Aircraft Corp. was elected first vice president and Robert Ram-speck, executive vice president of Air Transport Association, was elected second vice president.

Other officers elected were Gen. William W. Welsh, treasurer; L. Welch Pogue, counsel; and Jesse M. Hadley, secretary. The club, composed of about 150 members from all segments of the aviation industry, will have permanent headquarters at the Dupont Plaza Hotel in Washington, D. C.

## CAA Specification Changes

Taylorcraft BD aircraft are approved with Edo floats, models 60-1320 and 92-1400, by Specification A-696.

Aeronca 11 aircraft are approved for equipment with Wright winter shutters in accordance with instructions issued by Wright Flying Service, Williston, N. D., by Specification A-761.

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## WINGS OF YESTERDAY

### 25 Years Ago

The Collier Trophy for 1925 was awarded to Dr. Albert Reed of New York for the development of the Reed metal propeller.

A new radial air-cooled aircraft engine of very low weight per horsepower, known as the Wasp, was developed by the Pratt & Whitney Aircraft Co. of Hartford, Conn.

Formal amalgamation of two German air transport companies, the Aero Lloyd and Junkers, was completed in January, 1926, with the formation of a new company known as the Deutsche Lufthansa A. G.

### 10 Years Ago

(IN AMERICAN AVIATION)

Pan American Airways was the recipient of \$12 million in Federal funds for airport and radio construction in Central and South America.

Northwest Airlines applied to CAB for a 2,520-mile route from Minneapolis to Fairbanks, Alaska, via Fargo, N. D., and four fueling stops in Alaska. Plans called for twice-weekly service with DC-3 equipment.

CAB awarded a Pittsburgh-Birmingham route to Pennsylvania-Central Airlines and granted a Cincinnati-Atlanta certificate to Delta Air Corp.

## LETTERS

### Fast Baggage Service

To the Editor:

Regarding your editorial "Project for 1951" in the December 25, 1950, issue of AMERICAN AVIATION we would like to enter the claim that Hawaiian Airlines has already done something constructive about baggage handling problems. As you perhaps will remember, the system we use was described briefly in AMERICAN AVIATION about two years ago and although we doubt that the system could be used effectively on many of the mainland airlines, it has proven to be highly satisfactory to both the airline and the passenger here in Hawaii.

The Hawaiian Airlines' system is basically the same as that used by most airlines except that no claim check is given to the passenger and no identification is placed on the bag other than a small unprinted color tag to indicate its destination. The method of using colors to designate destinations provides a quick and almost foolproof method of segregating baggage by destination during loading and unloading activities. At the destination the baggage is unloaded and placed on a long rack which is located immediately adjacent to the passenger ramp and in such a position that the passenger goes past the ramp on his way from the airplane to the terminal building area.

The baggage distribution rack is partially enclosed so that spectators, etc., are discouraged from loitering in the area, this being necessary in order to make sure that plenty of room is provided for the arriving passengers. The passenger selects his own luggage and does not need to go through

the trouble of looking for a claim check, and having to wait until a baggage handler or porter takes the check, identifies his baggage, and delivers it to him. The nearness of the distribution rack to the airplane eliminates the time otherwise required to transport the baggage over greater distances.

During the more than two years we have used this baggage system results obtained have been very gratifying. Thus as contrasted to the minimum time of 15 minutes which your correspondent is quoted as stating he was forced to wait to have his baggage delivered to him at his destination, our average time is more on the order of three to four minutes and if a period greater than five minutes elapses from the time the passenger disembarks from the airplane to the time he picks up his baggage we know that something is wrong and start looking for the trouble.

Also rather surprisingly, we have fewer cases of lost baggage with the present system than we had with the claim check system. For one thing, the color system reduces the cases of mis-sent baggage. For another, we have had confirmation of our belief that most people are honest and that the few dishonest ones are reluctant to attempt to steal a bag when the owner might be standing right alongside of him. We have had no complete loss of baggage since the system has been in effect; the few mix-ups which have occurred have been honest mistakes due to similarity in the physical appearance of the baggage.

And last but by no means least is the fact that we have been able to reduce by a healthy percentage our cost of baggage handling while at the same time improving the basic service which is provided to the passenger.

DICK FARIS  
Asst. Supt. of Stations  
Hawaiian Airlines Limited

### Jetliner Performance

To the Editor:

After reading the editorial in AMERICAN AVIATION, January 22, which refers to the flight of our Jetliner from Chicago to New York, I am quite sure we haven't done a good job of explaining the nature of engineering and development flying which we are presently undertaking.

The present series of flights is being conducted to accumulate cruise control data under normal airline operating conditions. Under these conditions, we have not had record breaking as a primary objective. Frankly, we were faced with the alternative of duplicating the operating conditions which the airplane will actually experience in day-in and day-out airline service, or "going after" the records, and we chose the former. We have, therefore, felt that any comparison of our airplane performance should be to airline operating conditions of the same day rather than with some previous flights where wind, airplane weight and percentage power used would not be comparable to our conditions.

For example, we flew from Chicago to New York on January 10, in one hour and 42 minutes, at normal cruising powers, 97% of maximum gross weight, and average tailwinds of 55 miles per hour. Admittedly, the flight was only nine minutes less than the best previous American Airlines DC-6 time. The subject DC-6 flight, as you acknowledged, was with higher tailwinds, as well as considerably more favorable weight and power conditions. More important to us than the American Airlines flight which was "out to get the record" is American Airlines' Flight No. 14, flying the same time of day and the same date we made our flight. It had a block to block time of two hours and 40 minutes—10 minutes under scheduled time. Adding maneuvering and ground times at both ends of the line for our Jetliner flight brings our block to block time up to one hour and 55 minutes. Our flight then represented a reduction of 45 minutes from

the airline flying time of the same day.

The New York-Chicago non-stop operation has been flown regularly now by five aircraft types and it can be seen from the following table that the Jetliner schedule (based on standard airline time allowance) represents the greatest improvement over previous equipment, both in minutes saved, as well as percentage of time, than has been the case with any previous equipment change.

#### Airline Schedule Comparison

| New York—Chicago<br>Average Airline<br>Schedules (East-<br>West & Winter-<br>Summer) | Savings Over<br>Previous<br>Schedule |
|--|--------------------------------------|
| DC-3 ..... 4 hrs. 20 mins.   |                                      |
| 307 ..... 3 hrs. 52 mins.  | 28 mins. (11%)                       |
| DC-4 ..... 3 hrs. 35 mins.   | 17 mins. (8%)                        |
| Constellation<br>& DC-6 ..... 3 hrs. 8 mins.   | 33 mins. (15%)                       |
| Jetliner .... 2 hrs. 23 mins.  | 45 mins. (23%)                       |

On the other hand, looking at it from a record breaking standpoint, had we waited for winds and used maximum climb power and maximum cruise power with a normal fuel reserve, we could have made the Chicago to New York flight in one hour and 18 minutes, thereby clipping 32 minutes off the previous record. Incidentally, when we landed at New York on January 10th, there was sufficient fuel remaining on board to return to Chicago without landing at New York.

On our later flight from Miami to New York there is also the basis of a similar comparison. We made the flight from Miami to over Idlewild in two hours and 23 minutes. The previous lowest time was two hours and 41 minutes, established by a New Type Constellation aided by wind well over 100 miles per hour.

At Miami, however, exactly 34 minutes before we took off an Eastern Air Lines New Type Constellation (Flight No. 602 of January 25, 1951) took off for Newark and 27 minutes after we were over Idlewild this New Type Constellation landed at Newark. Had we come in on a normal airline approach at Idlewild we would not have been on the ground at Idlewild until five minutes after we actually passed over. Our demonstrated time saving over the New Type Constellation, both of us operating under normal airline procedures, was then 56 minutes.

From the flights discussed above, as well as others we have made here in the past few weeks, we have concluded that under comparable airline operating conditions the Jetliner offers an opportunity for the greatest reduction in airline schedule times yet made possible through the introduction of any new airliner.

R. DIXON SPEARS  
U. S. Representative  
A. V. Roe Canada Limited

## TECHNICAL LITERATURE

**FIRE HOSE:** Sharply defined illustrations showing detail construction of its line of municipal fire hose are contained in a six-page catalog now available from The H. F. Goodrich Co., Akron, Ohio.

**FORK TRUCKS:** Descriptions, photos and engineering data on fork trucks in the 3,000-4,000-pound capacity range are included in a new eight-page bulletin released by Baker Industrial Truck Div. of The Baker-Raulang Co., 1250 West 80th St., Cleveland 2, Ohio.

## OBITUARY

### Larry Therkelsen

Larry Therkelsen, west coast representative for the Federation Aeronautique Internationale and widely known as official timer of air races, died at his home in Los Angeles at the age of 68.

### Rocket Interceptors

The pilot of our early rocket interceptors will not fly the plane from the prone position, as has been often discussed in the past few years, according to H. R. Moles, chief engineer with Reaction Motors, Inc. In a talk before the Institute of the Aeronautical Sciences late last month, Moles discussed some of the characteristics of this future aircraft and said the pilot would probably sit in the normal upright position.

Actually, Moles said, a rocket interceptor is practical today, there is a place for this type aircraft in the U. S. defense picture and by combining the isolated features of aircraft now flying in one plane such an aircraft could be built quite economically. He suggested that the Bell X-1 could be modified for this type service.

Moles offered this general picture of the rocket interceptor of tomorrow. It would weigh 15,000 pounds loaded, carry 8,000 pounds propellant in a fuselage 30 feet long with wing span of 25 feet. Power would be supplied by two rocket engines, one rated at 21,000 pounds thrust, the other at 5,000 pounds. It would be launched from a catapult, preferably at a 45-degree angle to the ground. With the 5,000-pound-thrust engine ignited first, the interceptor would become airborne, imposing a load of about 2G on the pilot. This load would range upward to 6G during the flight as the 21,000-pound rocket went into effect.

Rate of climb would be 50,000 feet per minute, cruising speed 2,000 miles per hour, range 140 miles, duration six minutes. Interceptor duties would be handled by a 1,000-pound warhead mounted on the wingtip. At the high speed of the parent aircraft the warhead would only use a small propellant charge, just enough to get it clear of the interceptor.

There would be a skid rather than landing gear on the interceptor. Landing weight would be about 3,500 pounds and the empty propellant tanks would provide sufficient ballast to keep the craft afloat if it landed in the water.

The rocket interceptor's mission: home protection. Based near a vital defense area, such as a key city, atomic installation, etc., the rocket interceptor would be dispatched after the early warning radar picked up signals of approaching enemy aircraft. The launching device would be provided with facilities permitting the interceptor to be aimed in the best direction during launching.

### Soaring Meet

Out West, the Fifth Annual Mid-Winter Soaring Championships will be held February 24-25 at the Torrey Pines Gliderport near San Diego, California. Top award of the event will go to the pilot scoring the most points in all competitions at the two-day meet. This award, the John J. Montgomery Memorial Trophy, is named in honor of the man who made the first controlled-winged flight in history from a remote San Diego hillside in 1883, 20 years before the Wright Brothers flew at Kitty Hawk.

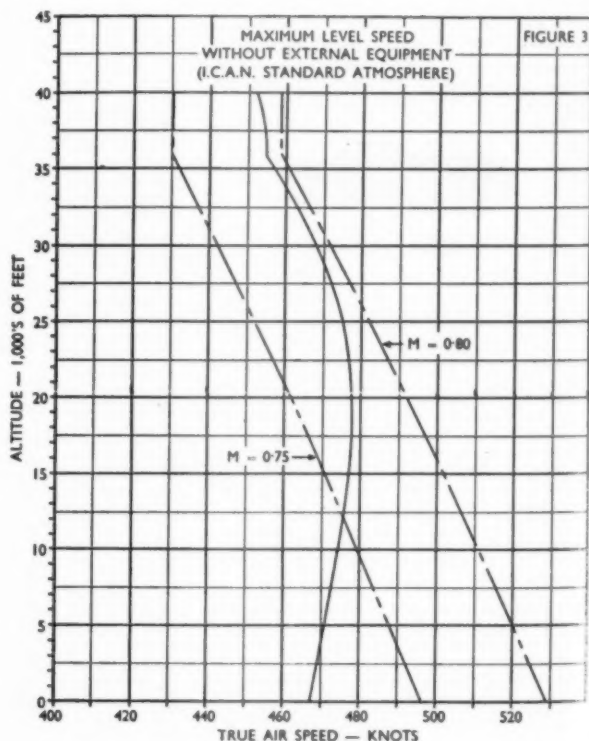
Torrey Pines appears to be ideally located for cliff or ridge soaring. The sailplanes take off out over the ocean and ride the rising air currents that blow in over the beach and hit the bluff. The sponsors of the

soaring meet, the Associated Glider Clubs of Southern California and the San Diego Junior Chamber of Commerce, anticipate an attendance of 15,000 persons.

### Stiffer Requirements for Private Pilots

As a result of a study of private flying accidents, CAB has concluded that increased knowledge and experience in cross-country flying should be required for a private pilot rating. A proposed Civil Air Regulation Amendment 51-2 would stipulate that applicants (1) have not less than 25 hours' solo flight time and 15 hours' dual instruction flight time including 10 hours of solo and five hours of dual cross-country flight time, except as otherwise authorized for CAA-certificated flight schools; (2) pass a more comprehensive written examination; and (3) demonstrate ability to plan cross-country flights, including interpretation of weather reports and a change of course to an alternate airport; and (4) demonstrate skill in cross-wind takeoffs and landings.

Send comments to the Bureau of Safety Regulation, CAB, Washington 25, D. C. not later than February 28. Comments received will be considered before the proposal is made into a regulation.



**Vampire Performance**—A curve showing performance at all altitudes is seldom officially released and the only reason de Havilland was permitted to release this one is because it refers to the two-place Vampire trainer, an unrestricted airplane. Unlike piston-engined fighters which reached peak performance at only one altitude, the speed of jets does not vary very much for the first 20,000 feet and slowly begins to fall off with altitude above that.



**Lots of Lava.** By the time I had left the Hawaiian Islands I had seen enough lava for a lifetime.

**Stan Kennedy**, Hawaiian Airlines' president had flown down to Kona Inn on the southernmost island of Hawaii, to join us for dinner on the last evening and drive us next day over the saddle road to Hilo. We had saved for the occasion two bottles of finest French champagne which **Amos Culbert**, v.p. of Northwest Airlines, had ordered long-range for us to toast in the New Year, but we had slept through New Year's and held on to the champagne for Stan Kennedy's arrival some days later.

Early next morning we drove north and east around the island. Not a cloud in the sky, one of those rare days in that part of the world. Before long Mauna Kea, the 13,000-foot extinct volcanic mountain came into sparkling clear view. Shortly after Mauna Loa, which is anything but extinct and also 13,000 feet high, came into sight.

The saddle road to Hilo goes between the two mountains. And if you can find a good clear day, here is a trip worth the time and effort. At the top of each mountain was snow—snow in this tropical wonderland of warmth and sunshine. Unlike what one usually pictures as a volcano, both mountains have very broad slopes. Neither is rugged—each is just a big pile vomited up from the earth below the sea when this big island in the Pacific was being created.

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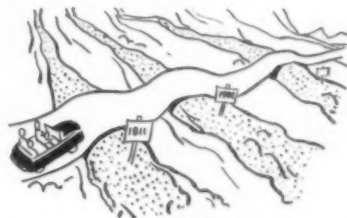
**Still Growing.** What makes the island of Hawaii interesting is that it is still being formed by the same forces that caused the Hawaiian chain to rise out of the bottom of the Pacific. It was hard to believe as we drove along that the calm, unassuming and passive-looking Mauna Loa was still fiery underneath and would break out again as it has so many times in the past few hundred years. The explosive eruption in its side of last June produced one of the greatest flows of all time, so it isn't likely that Mauna Loa will sleep quietly for long.



The National Park Service estimates the 1950 flows to have belched out 615,000,000 cubic yards of stuff which

they call lava. Many of you have seen Mount Shasta in northern California. They tell me that Mount Shasta consists of 80 square miles of contents. Mauna Loa consists of 10,000 square miles of content, which gives you some idea of the enormous size of the mountain. Yet Mount Shasta is actually more impressive as a mountain. Mauna Loa is just a geological workhorse still building land on this funny globe of ours.

The saddle road goes over one lava flow after another. At one point an old flow from Mauna Loa had encircled



a very old flow from Mauna Kea. Mile after mile and nothing but flows and each one dated. After a couple of hours driving the road leaves the barren lava area and jumps into Hilo, a quiet tropical town with lush vegetation and endless varieties of flowers, on the east side of the island.

\*\*\*

**Island Paradise.** Met **Walter Robinson**, Hawaiian's station manager, and **Don Crozier**, district sales manager, both good AMERICAN AVIATION readers, and **Capt. Frank Blaha** captained our DC-3 back to Honolulu, with wonderful views of the islands of Maui and Molokai. Sugar cane, pineapples, ferns, waterfalls—the Hawaiian Islands are a real paradise.

Then came a farewell dinner with the **C. E. (Delta) Woolmans** who were taking United back to the mainland and on to Atlanta next morning, and my wife and I figured out last minute things to do before taking off on Philippine Air Lines the next evening for Manila.

You can't go far in Honolulu without running into aviation people. **Riley Allen**, editor of the Honolulu Star-Bulletin, gave a lunch for **Harold Cray**, v.p. of United, and I was invited along. All but one airline was well represented. Then I had a drink with **Capt. Hugh Gordon** of Pan American, with whom I had flown on the PAA survey flight to Prague, Vienna and Rome in 1945.

**Art Stewart** of TWA had just arrived from a swing through Southeast Asia and we chatted about conditions

and he didn't sound too reassuring about what I would find out there—he seemed to think things might blow any minute. I heard that **John Clemenson** of TWA was vacationing at Hana Inn but I didn't get to see him. But I did have a chance to dash in and say hello to **Ruddy Tongg**, president of Trans-Pacific, who had just returned from a trip to Manila and Hong Kong.

\*\*\*

**Flaming Spears.** Departure from Honolulu was one of those things that brings out the ego. PAL put it on thick. **Walter Price** and **Francis Jones**, PAL officer based in San Francisco, had



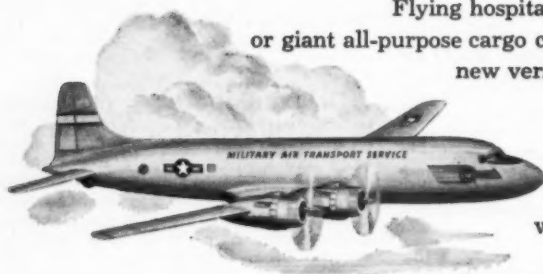
fixed up a whingding dinner at the Sky Room at the airport, managed by **Bill Kelly**, a man with imagination and a flair for the dramatic. In addition to really good food, Kelly has a few specialties. One of them is called the Flaming Torch. The lights in the restaurant are turned out, and a gang of waiters enter with broiled meat on spears and the spears are flaming like mad. It is one of the most effective ways to serve a steak I've ever seen.

But that wasn't all. The dessert was Strawberry Romanoff, consisting of ice cream, strawberries, and rum sauce, and that, too, arrived in flames. By the end of the meal I was afraid to light a cigarette for fear it would go up in flames. And to top everything off, Kelly contributed champagne "on the house," a very fine gesture, for which many thanks, kind sir.

\*\*\*

**Deluxe Departure.** **Charles Bonaudi**, operations director of PAL, was on deck and although the inbound flight from San Francisco was a few minutes late, the departure was on time. **Bert Talbott** of Northwest was on hand with more leis and if I recall we departed with about four each, and smelling sweeter than a department store perfume counter. It was as deluxe a departure as I've ever had and it's going to be tough to go to Washington National Airport in a limousine and line up with everybody else for tickets and just climb aboard without any ceremonies or leis or champagne toasts.

It was after dark as we boarded the PAL DC-6 and headed out over the water westward toward Wake Island. There was something nostalgic about it. In 1944 I had boarded a NATS flying boat and headed west about the same time in the evening, bound for war areas in the faraway Pacific. This time I was riding deluxe and heading to areas that still were not calm six years later. Off into the night with stops at Wake and Guam and the goal—Manila.



Flying hospitals for evacuating the wounded... swift troop transports... or giant all-purpose cargo carriers—new airplanes such as the Douglas C-118A bring new versatility to the Military Air Transport Service. The C-118A, soon to be in service, is the Air Force designation for the DC-6A *Liftmaster*—a larger version of the famous DC-6 passenger transport. Flying payloads up to 30,000 lbs. at 320 mph with a range of about 1,740 miles, the C-118A will do *one-third more work* than the C-54 at *one-third less operating cost!* Thus Douglas answers the need for a high-speed, long-range *dependable* military air transport. Meanwhile, on the drafting board and in the laboratory, Douglas engineers and research experts continue to pioneer new and more advanced aircraft in the direction of turbo-prop, jet and rocket propulsion.

Douglas Aircraft Company, Inc.

*Depend on*

**DOUGLAS**



WORLD'S LARGEST BUILDER OF AIRCRAFT FOR 30 YEARS ▶ MILITARY AND COMMERCIAL TRANSPORTS  
FIGHTERS ▶ ATTACK PLANES ▶ BOMBERS ▶ GUIDED MISSILES ▶ ELECTRONIC EQUIPMENT ▶ RESEARCH

## NEWS SECTION

(Continued from opposite page 3)

### MILITARY

**Help for Contractors:** To help Air Force contractors crack production bottlenecks such as manpower, metal scarcity, etc., Air Materiel Command's Industrial Planning Division has established a Production Resources Division. Brig. Gen. **A. H. Johnson**, chief of Industrial Planning Division, will direct the new office.

**Interviews Limited:** Air Materiel Command at Wright-Patterson AFB, Dayton, has limited unscheduled interviews with procurement officials, because of the heavy flow of contractors seeking business. Interviews may now be had only between 1:00 and 4:30 p. m. daily; mornings by mutual agreement.

**MATS Vice Commander:** Rear Adm. **Hugh H. Goodwin** has been appointed vice commander of Military Air Transport Service, succeeding Rear Adm. **John P. Whitney**, who will report for sea duty with an aircraft carrier command.

**Tunner Assigned:** Maj. Gen. **W. H. Tunner**, former commanding general of Far East Air Forces' Combat Cargo Command, will go on temporary duty as special assistant to Air Force Chief of Staff, in charge of troop carrier matters. He is still technically assigned as deputy commander for operations of Military Air Transport Service.

**AF Jet Overhaul:** Jet overhaul facilities at Norton Air Force Base, San Bernardino, Calif., are expected to be in operation by Mar. 15.

### AIRLINES

**EAL San Juan Coach:** Eastern Air Lines plans New York-San Juan coach service starting Mar. 26 at fare \$10.50 under that now charged by Pan American World Airways for tourist operations (\$64.50 one-way against \$75). Standard fare will be \$100, same as PAA.

**ACI Profit:** Air Cargo Inc., airline-owned company, reports that it had a surplus after taxes in 1950 for the first time in its history. **Emory Johnson**, who has been secretary and general manager, was elected vice president and general manager, and **J. P. Houghton** was named secretary.

**New NWA Minimums:** New CAA rules substantially raising operating minimums for all Northwest Airlines' planes are now being followed by the airline. NWA, which agreed to the rules, said it is being "super-cautious" in view of mishaps which have occurred in recent months. At Minneapolis, minimums for use during marginal weather with ILS have been raised from former 300 ft. ceiling to 600, and visibility from  $\frac{3}{4}$  miles to  $1\frac{1}{2}$  miles. Similar adjustments were made at other airports. Regular approach minimums, without ILS, were raised to 800 ft. and two miles.

**Underwood Heads RAL:** **E. Victor Underwood**, president of G.L.F. Holding Corp. of Ithaca, and a director of Robinson Airlines, has been elected president of the airline, a post which has been vacant. Re-elected were **B. J. Miner**, board chairman, and **Robert E. Peach**, executive vice president and general manager.

**People:** **Keith Granville**, former British Overseas Airways Corporation general manager-sales and traffic, has been named to new post of sales director. **J. W. S. Brancker**, former general manager-commercial, was appointed general manager of international affairs. Their

former posts have been abolished . . . **L. A. Person** has been promoted from manager of schedules and tariffs to traffic manager by Braniff Airways.



### CIVIL AERONAUTICS BOARD

**Trans-Texas Extension:** CAB extended Trans-Texas Airways' local service route segments 1, 3, 4, and 5, until Mar. 31, 1954, and Mission-Brownsville portion of segment 2 until Mar. 31, 1952. Decision reflected sharp departure from show cause order of two years ago when termination of TTA was proposed. To strengthen routes, Board authorized new service to Pecos and Tyler, Texas; elimination of Pioneer Air Lines' competitive service between San Angelo-Dallas; elimination of TTA's Eagle Pass-Mission segment; and, elimination of TTA service to Van Horn, Bay City, Freeport, Stephenville, Coleman, and Corsicana.

#### Applications and Petitions

- "**Area**" **Aerovias Ecuatorianas** applied for foreign permit to operate between Quito or Guayaquil, Ecuador, and Miami via Panama. Owned entirely by Ecuadorean nationals, carrier has been designated by Ecuador to operate routes included in a bi-lateral agreement with the U. S., signed in 1947. Since May 29, 1949, line has operated approximately two flights a month over the route under special permits issued by CAA.

- **W. R. Grace & Co.** interests in Pan American-Grace Airways again requested approval of Panagra-National Airlines interchange agreement following statement of four directors of Panagra representing Pan American World Airways' interests that Panagra should drop National for Eastern.

- **Western Air Lines** and **United Air Lines**, complying with CAB directive, requested necessary approval of increased Los Angeles-San Francisco coach tariffs. New tariffs, to become effective Mar. 1, contain CAB-set \$11.70 fare. Present fare is \$9.95.

- **Eastern Air Lines** and **Braniff Airways** have applied for Board approval of an equipment interchange agreement calling for through service between Denver and Miami via Memphis. Proposal was submitted in response to a Board request contained in its decision in the Through Service Proceeding last November. Previously, in response to a similar request, Eastern and Mid-Continent Airlines applied for approval of one-plane operations between Kansas City and Miami via St. Louis.

#### Actions

- **Empire Air Lines'** application for an exemption to extend its route west from Pasco, Washington, to Yakima and Seattle has been denied by CAB. West Coast Airlines and United Air Lines opposed the application in which Empire sought to succeed to routes now operated by Inland Airways, Inc., a Washington intra-state carrier which reportedly plans to cease operations.



### FINANCIAL

#### Airlines

**American Airlines** reports unaudited 1950 net income of \$10,400,000 after taxes on record revenues of \$188,685,000, against 1949 net of \$7,144,570 on \$103,206,000 revenues. AA said 1950 profit was after loss of \$923,000 on liquidation of investment in American Overseas Airlines and after provision of \$11,400,000 for federal income and excess profits taxes.

**Capital Airlines** has issued call for redemption of all its 4% convertible income debentures Series B, due Sept. 1, 1960. Redemption date for the debentures, which total \$2,800,000, is Mar. 12, 1951. Holders may convert them into common stock at rate of 90 shares for each \$1,000 amount of debentures.

## Manufacturing

**Parker Appliance Co.** reports net earnings (unaudited) of \$180,525 on \$4,451,767 sales for six months ended Dec. 31. Backlog on that date was \$5,642,759.

**The Garrett Corp.** had unaudited net profit of \$790,000 after provision for estimated income and excess profits taxes of \$898,000 for six months ended Dec. 31, against \$830,637 profit for same 1949 period. **AiResearch Manufacturing Co.** division has current backlog of \$38,000,000 compared with \$32,500,000 last November.

**North American Aviation** reports net income after taxes for last three months of 1950 (first quarter of current fiscal year) of \$1,335,391, against \$1,390,000 for same 1949 period. Company received \$33,486,797 in new business during quarter and made shipments totaling \$34,061,221.

**Bendix Aviation Corp.** reports \$16,954,116 net income for fiscal year ended last Sept. 30, against \$11,086,781 net in previous fiscal year.

**Taylorcraft Inc.** has completed financing program which it says will enable it to continue lightplane production as long as materials are available and to carry on with defense contracts. Company has incorporated under Pennsylvania charter with \$1,000,000 capital divided into 500,000 shares of \$2 par value. Present shareholders will receive five shares for each one now held. Former Ohio corporation will be dissolved. Plant is at Conway-Pittsburgh Airport, Conway, Pa.

## Dividends

**Consolidated Vultee Aircraft Corp.** declared quarterly dividend of 35c per common share, payable Feb. 27 to stockholders of record Feb. 16.

**Lockheed Aircraft Corp.** declared 50c dividend payable Mar. 14.

**Perfect Circle Corp.** declared 25c dividend, payable Mar. 1 to stockholders of record Feb. 12.

## CIVIL AVIATION

**Loans for Airports:** A bill (H. R. 2466) has been introduced in the House by Rep. **Frazier Reams** (Ind., Ohio) to amend Federal Airport Act to permit cities to borrow from Reconstruction Finance Corp. to pay their share of federal aid projects. RFC would be authorized to buy securities and obligations of, or make loans to, any municipality or other political sub-division whose project has been approved under the Act. Securities purchased would have to mature within 25 years and bear interest at a rate not in excess of 1½%.

## LABOR

**NWA Election:** Election is to be completed by Feb. 20 to determine collective bargaining representative for Northwest Airlines' clerical employees. Dispute is between International Association of Machinists and Brotherhood of Railway Clerks, with latter in role of petitioner.

**Boeing Union Shop:** Employees of Boeing Airplane Co. in Seattle have voted 9,939 to 1,789 in favor of an International Association of Machinists union shop.

## IN GENERAL

**DPA-NPA Appointments:** **Edwin T. Gibson**, executive vice president of General Foods Corp., has been named deputy administrator of Defense Production Administration for staff services, and **W. W. Watts**, of Wynnewood, Pa., was appointed assistant to the Administrator to act as chairman of DPA's Production Executive Committee. **John H. Hollands**, Buffalo, was named general counsel of National Production Authority.

## Air Force Contracts

Following are recently awarded Air Force contracts in excess of \$100,000:

**Radioplane Corp.**, Van Nuys, Calif., \$15,280,000, target aircraft, spares for aerial targets, autopilots.

**Link Aviation Inc.**, Binghamton, N. Y., \$10,000,000, C-11A jet fighter trainers.

**Loewy Construction Co.**, New York, \$10,932,052, die forging and extrusion presses.

**Bendix Products Division**, South Bend, Ind., \$1,279,000, \$283,457, \$148,650, and \$138,778, wheel and brake assemblies; \$875,378, carburetor spare parts and fuel injection spare parts for aircraft.

**AC Spark Plug Div.** General Motors Corp., \$4,500,000, high altitude spark plugs.

**Goodyear Tire & Rubber Co.**, Akron, O., \$1,967,013, \$123,255, \$291,168, \$244,370, \$174,987, \$144,894, wheel assemblies, and wheel and brake assemblies.

**North American Aviation Inc.**, Los Angeles, \$1,000,000, wing tanks; \$100,000, misc. assemblies and subassemblies (latter at Port Columbus, O., plant).

**AVCO Manufacturing Corp.**, Cincinnati, \$1,244,269, glide path receivers.

**General Electric Co.**, Dayton, \$1,146,014, aircraft generators; \$902,428, spare nozzleboxes (Schenectady); \$249,147, generators (Schenectady).

**Union Switch and Signal Co.**, Swissvale, Pa., \$1,000,000, bomb tails.

**Curtiss-Wright Corp.**, Propeller Div., Caldwell, N. J., \$984,872, propeller assemblies.

**Graham Aviation Co.**, Butler, Pa., \$940,000, operation of Greenville AF Base, Miss., for basic flying training.

**Emerson Radio & Phonograph Corp.**, New York, \$869,817, glide path receivers.

**Pacific Mercury Television Mfg. Corp.**, Van Nuys, Calif., \$731,105, glide path receivers.

**B. F. Goodrich Co.**, Akron, O., \$341,462, wheel and brake assemblies; \$355,000, wheel assemblies.

**Eclipse-Pioneer Div.**, Bendix Aviation Corp., Teterboro, N. J., \$470,910, inverters; \$172,922, transmitters; \$109,459, indicators.

**Delron Co. Inc.**, Los Angeles, \$575,081, steel nuts.

**General Motors Corp.**, Allison Div., Indianapolis, Ind., \$458,856, engine parts.

**Republic Aviation Corp.**, Farmingdale, N. Y., \$550,000, increase in spare parts; \$100,000, kits and modernization modification parts for assemblies and subassemblies for aircraft.

**Gould-National Battery Co.**, Depew, N. Y., \$314,952, aircraft batteries.

**Jack & Heintz Precision Industries Inc.**, Cleveland, \$228,322, starters.

**Scintilla-Magneto Div.**, Bendix Aviation Corp., Sidney, N. Y., \$202,226, engine ignition analyzers.

**Fairchild Camera & Instrument Corp.**, Jamaica, N. Y., \$297,574, echo boxes.

**Bill Jack Scientific Instrument Corp.**, Solana Beach, Calif., \$510,000, camera control system and magazines.

**A C Spark Plug Div.**, General Motors Corp., \$4,500,000, high altitude spark plugs.

**Skinner Purifiers Div.**, Bendix Aviation Corp., Detroit, \$453,635, fuel filter kits.

**D. C. Cooper Co.**, Chicago, \$406,000, humidity indicator cards.

**Titeflex Inc.**, Newark, N. J., \$369,927, high tension ignition harness.

**Linde Air Products Co.**, New York, \$334,951, oxygen, gas, dehydrating and testing.

**Parker Appliance Co.**, Cleveland, \$233,573, ring packing.

**Solar Aircraft Co.**, San Diego, Calif., \$270,980, maintenance spare parts for aircraft.

**Cleveland Pneumatic Tool Co.**, Cleveland, \$130,000, misc. aircraft spare parts.

**Elastic Stop Nut Corp. of America**, Union, N. J., \$204,936, steel nuts.

**Steelcraft Mfg. Co.**, Rossmoyne, O., \$151,749, maintenance docks, transport dolly.

**R. R. Robertson Co.**, Chicago, \$120,623, still picture camera and spares.

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AZINE

J E

February 26, 1951

Vol. 14 No. 32

## a LOOK at the WEEK

Navy is reported to have ordered 500 helicopters, doubling manufacturers' backlog.

Authorization for Army Field Forces to organize its own helicopter squadrons is awaiting Defense Secretary Marshall's approval. It's expected to be okayed despite Air Force opposition.

Manufacturers are awaiting important new contract termination provisions which Munitions Board is writing in to procurement regulations.

Interest in getting into twin-engined airline transport field is being shown by Lockheed Aircraft Corp. Company has been talking to airlines to determine market, desirable characteristics, performance, etc.

Top-level management changes at Consolidated Vultee Aircraft Corp. are reported in the offing.

You can expect sharp cut in fiscal 1952 federal aid airport construction program, congressional sources say. Money will be spent only on fields having definite tie-up with military.

Interest of civil flight schools in contracting to operate Air Force basic flight schools is seen in fact that 260 representatives attended Air Materiel Command's recent Wright Field information meeting. So far, AF has asked bids for operation of only five such schools.

Airlines were startled by CAB assertion that it wanted by Mar. 1, for purposes of materials priorities, a list of new planes which each has ordered or estimates it will order for delivery through fiscal 1954, complete with manufacturer and type. Airline officials say that even if they knew what they'll need that far ahead, they couldn't put it on record where competitors might get it. CAB will probably get a general statement.

Post Office Dept., which has been studying ways of improving handling of all classes of mail, is in process of writing air mail portion of its report. Incidentally, PO thinking on future includes possible use of jet transport for carriage of all long-haul first-class mail. Planes might be owned by government, leased to airlines.

## Big Business For Civil Overhaul Firm

Overhaul and reconditioning of Air Force planes and engines by civilian companies, which has boomed to over a \$90 million business since the start of the Korean war, is slated for an additional \$251 million expansion and will remain at a high level under a new AF policy.

This policy states that all major maintenance and repair work connected with training support and other non-tactical requirements will be placed with civil companies.

**Present:** Some 15 companies are now doing over \$90 million worth of AF work. In addition, about \$25 million of Navy business is being handled. Largest contract awarded to date went to Grand Central Aircraft Co.—\$19,220,000 for reconditioning AF B-29's.

**Future:** Real impact on this civil industry won't be felt until the \$251 million already funded by AF against specific work projects in fiscal 1951 is released. Negotiated contracts covering this additional volume are now being discussed.

**Policy:** In addition to all major training and non-tactical maintenance and repair, civilians will handle certain tactical work. AF will build depots to take care of normal tactical maintenance, but will not provide for short-term peaks or special jobs—these will be handled by civilians. Navy, on the other hand, although it has some civil work outstanding, does not plan a major shift to this type of maintenance and overhaul.

**Contractors:** Present large AF-Navy contractors are Aircraft Engineering & Maintenance Co., Oakland, Calif.; American Aircraft Corp., Knoxville, Tenn.; Boeing Airplane Co., Seattle; Douglas Aircraft Co., Santa Monica, Calif.; Grand Central Aircraft Co., Glendale, Calif.; Lockheed Aircraft Corp., Burbank; Lockheed Aircraft Service, Burbank; North American Aviation, Los Angeles; Pacific Airmotive Corp., Burbank; Slick Airways, San Antonio; Spartan Aero Repair, Camden, N. J.; Texas Engineering & Manufacturing Co., Dallas; Beech Aircraft Co., Wichita; Goodyear Aircraft Co., Akron.

## Lightplane Policy Still Lacking

It's still uncertain to what degree lightplane manufacturers will be restricted, by lack of priority assistance, from securing materials for production of personal aircraft, and how deep lightplane flying may be cut by lack of spare parts.

Although Air Coordinating Committee on Feb. 15 approved a 90-day temporary policy of recommending almost unlimited priority assistance, no permanent program has yet been adopted. ACC's policy is a stop-gap; it's very likely that there'll be restrictions in the final plan.

ACC's temporary policy states:

**Personal Aircraft:** Will be manufactured during next 90 days based on annual production rate of 2,500 planes (against 3,386 in 1950).

**Spare Parts:** ACC will recommend to National Production Authority 90-day interim plan of priority assistance to insure necessary spare parts to maintain all existing non-air carrier planes in flying status (includes U. S. planes in foreign countries).

However, for the long run, ACC members are reluctant to give blanket approval which would include non-

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essential users of aircraft. The big problem, though, is how to screen out such users.

**Screening Plan:** ACC has asked CAA to produce such a plan. For example, materials might be okayed for production of a plane ordered by a doctor for business use, or for a corporation for executive travel. Spare parts would be allocated to a business user but not to a pleasure flyer.

**'Experience' Period:** CAA has not yet produced a plan that is acceptable to other ACC members. The 90 days are intended to serve as an "experience" period, i. e., from the priority requests which it handles during this time, CAA is expected to gain the experience from which to form a screening plan. Before submitting the plan to ACC, CAA will determine whether it meets with approval of the military.

## Prototype Decisions

The technical subcommittee of CAA's Prototype Aircraft Advisory Committee, appointed after passage of prototype testing law, reached tentative decisions on two subjects at its first meeting last week:

**Cargo Plane:** Previously-discussed speeds have been too low; prototypes should have 300 mph. block speed. Smaller of two proposed planes should have 30,000 lbs. gross and 2,000-mile range with reserves. Larger model is scheduled for 50,000 lbs. gross.

**Feeder Plane:** Recommended field size for plane reduced from 3,300 ft. to 2,800 ft. More attention is to be paid to plane's ready convertibility to mail and cargo use when passenger loads are low. Group feels it needs more information on traffic growth of local service lines before establishing definite specifications.

Although there is nothing definite on equipment which might become available for testing under the law, the group has discussed North American's B-45 jet, Convair with turbines, Martin 404 with turbines, Douglas C-124 with T-34 jets and Chase C-122 cargo plane.

## MANUFACTURERS

**Cutlass Ordered:** A Navy production contract for a "substantial quantity" of its F7U-3 Cutlass carrier based jet fighter has been received by Chance Vought Aircraft Division of United Aircraft Corp. The plane, a tailless design without wing flaps, grosses 21,000 lbs. and is powered by two Westinghouse J-40 engines with afterburners. It is said to be fastest fighter in Navy production.

**Helicopter Survey:** Eastern helicopter manufacturers are being surveyed by R. K. Waldo, assistant to CAA Deputy Administrator Fred Lee, as part of government study to evaluate potential effect of military helicopter developments on future commercial uses of rotorcraft. Post Office Dept. suggested study to Air Co-

ordinating Committee to determine if future helicopter progress should be encouraged by continued federal aid.

**Continental Order:** An additional \$7,000,000 Navy order for helicopter engines has been received by Continental Aviation & Engineering Corp., subsidiary of Continental Motors Corp. Original pilot order was received a year ago. Production will be handled at Continental's Detroit plant.

**Rheem Contract:** Rheem Manufacturing Co.'s aircraft division at South Gate, Calif., has received its first major airframe contract—a subcontract from Lockheed Aircraft Corp. for fabrication and assembly of T-33 jet trainer and F-94 jet fighter nose sections.

### Expansion

**Solar Aircraft Co.** plans expansion of San Diego and Des Moines facilities to bring total plant area to over 1,000,000 sq. ft. Employment, now over 3,000, will exceed 5,000 by year end.

**Boeing Airplane Co.** is now employing 24,150 in Seattle-Renton area, up 6,000 since start of Korean war but far short of World War II peak of 45,188.

**General Electric Co.'s** expanded turbojet manufacturing facilities at Lockland, O., will employ over 10,000 workers, at least 40% increase over previous estimates.

**Lockheed Aircraft Corp.** will build \$2,000,000 office building to accommodate 1,500 workers adjacent to Factory A at Burbank, and \$300,000 engineering building next to Factory B.

**People:** William B. Bergen, who has been chief engineer of The Glenn L. Martin Co. since 1949, was elected vice president-chief engineer of the company . . . **Carl Wootten**, who has been in sales work for several personal aircraft companies, was named sales manager of Aero Design & Engineering, Oklahoma City, manufacturer of twin-engined Aero Commander . . . **H. J. Van der Linde** has been promoted from airplane production superintendent to production manager of Ryan Aeronautical Co. . . . **Guy W. Vaughan**, former president and board chairman of Wright Aeronautical Corp., has been elected a director of Boots Aircraft Nut Corp., and **Charles S. Jackson**, a director for the past five years, was elected vice president . . . **Howard G. Golem**, formerly chief of material for San Diego division of Consolidated Vultee Aircraft Corp., was appointed director of procurement for the company . . . **Adm. H. B. Sallada** (USN-Ret.), former chief of Bureau of Aeronautics, has been named assistant to **Paul J. Frizzell**, vice president of Fairchild Engine & Airplane Corp.

## PLANES & EQUIPMENT

**\$4,900 Helicopter:** Hiller Helicopters, Palo Alto, Calif., is producing a two-place helicopter powered by ram jet engines, which was designed to sell for \$4,900. However, the commercial program has been halted and production has been diverted to military (both Air Force and Navy are evaluating the plane). The helicopter, known as Hiller-Hornet, has 70 mph cruising speed, range of over 50 miles with two passengers, and empty weight of 356 lbs. The Hiller-designed engines, weighing 11 lbs. each and producing 31 lbs. net thrust, are mounted on tip of each rotor blade by two screws, and each can be replaced in three minutes. Each engine will cost \$150-\$200, and operating life is expected to permit discarding it rather than overhauling it following service use.

**Sapphire F-84:** First flight of a Republic F-84F, swept-wing version of Thunderjet, powered by a Wright J-65 Sapphire 7,200 pound thrust jet engine was successfully completed at Edwards Air Force Base, Muroc, Calif., on Feb. 14. F-84F has been flying since last June with an Allison J-35 5,200 pound thrust engine, but production models will be powered by the J-65. The Sapphire installed in the plane for the Muroc flight was one of a service test quantity obtained from Armstrong

# American Aviation

News Issue



Vol. 14 No. 32

WAYNE W. PARRISH, Editor and Publisher  
ERIC BRAMLEY, Executive Editor

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Siddeley Motors Ltd., British designers, from whom Wright obtained license for U. S. production.

**Position Determining Device:** Hastings Instrument Co., Hampton, Va., has developed, under contract with Air Force's All Weather Flying Division, a new position determining device for aircraft, which is expected to be used in automatic landing systems. In tests, the system, called Raydist, determined position of a Piper Cub with accuracy equal to one foot in 5,000 ft.

**Panagra Conversion:** A \$500,000 engine and propeller conversion program on all its DC-6's has been started by Pan American-Grace Airways. Company will switch from Pratt & Whitney R-2800-CA-15 engines to later CB-16 type and will install new Hamilton Standard reversible pitch aluminum props.

**People:** W. G. McDowell, who was chief aviation engineer for Union Oil Co. during last war and later managed Burbank base of Pacific Airmotive Corp., has been elected president of Oakland Aircraft Service, Oakland, Calif., engine overhaul subsidiary of Transocean Air Lines. **Thomas E. Lewis**, who was sales manager of PAC's Burbank base, was named vice president of OAS.

## AIRLINES

**AA Buys 3 DC-6B's:** Purchase of three more Douglas DC-6B's has been approved by American Airlines' directors, making total of 17 ordered. All will be delivered this year. AA made a "nice" January profit and hopes for a first quarter profit, **C. R. Smith**, president, said.

**340's For CAL:** Continental Air Lines is reported to have placed an order with Consolidated Vultee Aircraft Corp. for eight Convair 340's, new and larger version of the 240. Continental is now operating five 240's. The Texas Co. has also ordered one 340.

**Changes at NWA:** Northwest Airlines has made extensive changes in its operations department, with **Frank C. Judd**, former western region vice president, taking over as vice president-operations and engineering, replacing **K. R. Ferguson**, who retains the title of vice president. Two veterans have resigned: **R. E. Geror**, oldest employe in length of service (23 years), who has been assistant to the vice president-operations and engineering, and **Mal Freeburg**, 20-year employe and No. 2 pilot on the seniority list, who was operations executive.

**\$18 Million Military Travel:** Scheduled airlines received \$5,211,000 revenue from travel by civilian and uniformed personnel of military agencies in first four months of current fiscal year, and expect \$13,000,000 more during last eight months, Air Transport Association states.

**People:** **Buell Patterson**, former public relations director of American Airlines has been appointed to a similar post with Pan American-Grace Airways, headquartered in New York. . . **Don B. Wilson** has resigned as United Air Lines' superintendent of agency and interlines sales and has joined Panagra. He will serve in South America after a period in New York. . . TWA's first 25-year pin has been presented to **Lee Flanagan**, superintendent of flight dispatch and assistant to the western director of operations.

## CIVIL AVIATION

**New Taxi Class:** CAB proposes new Economic Regulation 298 to dispense with "small irregular" classification

and substitute new class called "air taxi operators." Affected would be over 2,000 small irregulars flying planes of less than 12,500 lbs. maximum certificated take-off weight who have been operating under letters of registration for past three years.

**CAOA Moves:** National headquarters of Corporation Aircraft Owners Association will be moved Mar. 1 from 444 Madison Ave., New York, to 1025 Connecticut Ave., Washington 6, D. C. **N. F. Silsbee**, executive secretary, will move to Washington and devote full time to CAO work.

**Defense Zone Flights:** Two-way radio is now a requirement for all flights within Air Defense Identification Zones, except where a waiver is granted, according to a new CAA amendment.



## CIVIL AERONAUTICS BOARD

### Actions

• **Capital Airlines'** Route 14 certificate and American Airlines' Route 4 certificate amended until Aug. 11, 1954, to permit more flexible routing of all-cargo flights. Change permits Capital to serve Baltimore on all-cargo flights between New York and points west while AA is authorized to serve Los Angeles and San Francisco on its all-cargo planes. Both authorizations are subject to restrictions. Services have previously been permitted under temporary exemptions.

• **Expreso Aereo Inter-Americano, S. A.** authorized to continue operations under its foreign air carrier permit between Havana and Miami through Apr. 4, 1954.

• **Los Angeles Air Service** turned down on application for individual exemption to continue operations as large irregular carrier. By furnishing "route-type" services between Los Angeles and New York, Board said carrier has "demonstrated such a disregard for compliance with the Board's regulations that it is not in the public interest to entrust it with authority to render the irregular air services for which it has applied." Carrier may appeal within 30 days.

• **Northwest Airlines'** proposals to suspend operations at Jamestown, N. D., and Bozeman and Kalispell, Mont., turned down pending formal hearings.

• **Seven large irregular carriers** face suspension of letters of registration for non-compliance with statistical filing requirements of CAB. Given until Mar. 1, to comply, carriers are: Associated Airways; Coastal Air Lines (Newark); Federated Airlines; Pacific Alaska Air Express; Regina Cargo Airlines; Royal Air Service; and, Twentieth Century Air Lines.

• **Standard Air Cargo's** proposal to establish tax exempt round-trip fares of two cents per mile for military personnel suspended by CAB pending formal hearing. A large irregular carrier, Standard planned to make the proposal effective Feb. 21. Initial period of CAB's suspension runs through May 21.

### Applications and Petitions

• **Pan American World Airways** asked CAB to set aside recent order in which PAA's Asuncion, Paraguay-Caracas, Venezuela non-stop proposal was consolidated for hearing with new route applications of Braniff, Chicago and Southern, and PAA itself. Carrier asked that non-stop request be given separate and expedited hearing. It also requested exemption to operate the non-stop pending completion of hearing and related procedural steps.



## FINANCIAL

### Manufacturing

**Douglas Aircraft Co.'s** board will recommend to stockholders at annual meeting Apr. 18 that authorized no-par common stock be increased from 1,000,000 to 2,000,000 shares.

**United Aircraft Corp.'s** stockholders will be asked on Apr. 14 to approve common stock increase from 3,600,000 to 4,500,000 and payment of stock dividend on basis of one additional share for each five held.

**Continental Motors Corp.** reports net profit after taxes of \$3,611,245 for fiscal year ended Oct. 31, 1950, against \$1,801,205 net in previous year.

**Plasecki Helicopter Corp.'s** board has called for redemption on Mar. 30 the convertible debentures due May 1, 1955. Debentures, which will be redeemed at 102 plus accrued interest, are convertible into common stock on basis of eight shares for each \$100 par value of debentures.

**Aeroquip Corp.** reports \$180,085 income on \$2,706,797 sales for quarter ended Dec. 31, against \$187,727 on \$1,668,072 for same 1949 quarter.

**Beech Aircraft Corp.** has completed \$10,000,000 loan agreement with syndicate of seven banks, representing increase from a similar credit agreement for \$5,000,000 in effect since last fall. Purpose is to provide working funds.

**Pacific Airmotive Corp.** reports \$543,633 profit on \$13,702,547 sales for year ended last Nov. 30, against \$24,962 loss in previous year.

### Airlines

**Capital Airlines** reports record net income for 1950 of \$1,066,841 after taxes of \$605,600, against 1949's net of \$834,178 after \$28,800 taxes. Operating revenues were up \$2,924,888 to a new high of \$29,816,460.

**Pioneer Air Lines** earned 1950 net profit of \$135,611 after taxes against \$126,633 profit in 1949.

**The Flying Tiger Line** reports estimated \$356,788 profit after taxes on \$3,958,923 gross revenues for second quarter of fiscal year, covering three months ended Dec. 31, against \$82,933 profit in same quarter last year. Figures do not take into account new excess profits tax. First six months of fiscal year show \$879,413 profit after taxes.

## LABOR

**Fairchild Settlement:** Fairchild Aircraft Division strike at Hagerstown was settled after five and one-half weeks when company acceded to two major demands of United Auto Workers-CIO—a pay increase and elimination of merit system of wage hikes. Company agreed to eliminate merit system "for the duration of the national emergency" and to use the automatic progression system. It also offered a 12c per hr. boost retroactive to Oct. 30, and a 15c increase effective when strikers returned to work Feb. 14.

## AROUND THE WORLD

**New SAS:** Per A. Norlin of Sweden has been named president of the "new and completely integrated" Scandinavian Airlines System, establishment of which has now been approved by the Danish, Norwegian and Swedish airlines and by the Parliaments of the three nations. **Per M. Backe** of Norway and **V. J. Rasmussen** are senior vice presidents. Executive committee: **Per M. Hansson**, Norway, chairman; **Marcus Wallenberg**, Sweden, first vice chairman; **Per Kampmann**, Denmark, second vice chairman; **Prince Axel**, Denmark; **E. F. Eckhoff**, Norway, and **Axel Gjores**, Sweden, Regional managing directors; **K. Kalm** for Denmark; **Gen. Hj. Riiser-Larsen**, Norway; **Sten Unne**, Sweden.

## COMING UP

**Feb. 27**—Savannah Aviation Clinic, Hotel De Soto, Savannah, Ga.

**March 12-13**—Third annual short course on uses of aerial equipment in agriculture, Purdue University, West Lafayette, Indiana.

**March 12-14**—Annual Meeting of Airport Division Board of Directors American Road Builders Association, Schroeder Hotel, Milwaukee, Wis.

## Air Force Contracts

Following are recently-awarded Air Force contracts in excess of \$100,000:

**Douglas Aircraft Co.**, Santa Monica, Calif., \$12,000,000, model airplanes; \$11,500,000, to tool Tulsa plant (also received letter of intent for production of undisclosed number of Boeing B-47 jet bombers).

**North American Aviation, Inc.**, Los Angeles, \$4,813,083, aircraft spare parts; \$2,000,000 misc. assemblies, subassemblies, kits and spare parts for aircraft.

**Link Aviation Inc.**, Binghamton, N. Y., \$6,000,000, F-89C flight simulators.

**Beech Aircraft Co.**, Wichita, Kans., \$4,813,083 and \$390,078, jettisonable fuel tanks; \$408,657, fuel tanks.

**Transducer Corp.**, Boston, Mass., \$3,905,000, trainer-radar. **American Locomotive Co.**, Dunkirk, N. Y., \$3,070,624, metal shipping containers.

**Schwien Engineering Co.**, Los Angeles, \$1,448,195, modification and repair gyro assemblies.

**Surface Combustion Corp.**, Toledo, O., \$1,316,778, engine and shelter heaters.

**Minneapolis-Honeywell Regulator Co.**, Minneapolis, Minn., \$1,250,000, vertical gyro indicators.

**Sorensen & Co.**, Stamford, Conn., \$1,000,000, power unit, gun bomb rocket sight.

**Radioplane Co.**, Van Nuys, Calif., \$916,429, target aircraft. **Keco Industries Inc.**, Cincinnati, \$759,924, portable aircraft coolers.

**Elcor Inc.**, Chicago, \$438,076, alternators; \$225,000, alternators and regulators.

**Sperry Gyroscope, Sperry Corp.**, Great Neck, L. I., N. Y., \$618,000, airborne ignition engine analyzers.

**United States Steel Co.**, Cincinnati, \$640,109, steel angle and plate.

**Clayton Mfg. Co.**, Rosemead, Calif., \$400,000, vapor pressure type cleaner.

**Thomas A. Edison Inc.**, West Orange, N. J., \$415,757, fire detection kits.

**Hammond Mfg Corp.**, Pasadena, Calif., \$347,400, metal shipping containers.

**Goodyear Tire & Rubber Co.**, Akron, O., \$245,197 and \$158,173, wheel and brake assemblies.

**Boeing Airplane Co.**, Seattle, \$218,797, modification of power racks; \$100,000, emergency kits.

**Peters Dalton Inc.**, Detroit, \$971,495, metal shipping containers.

**Aeroquip Corp.**, Jackson, Mich., \$397,245, aircraft hose.

**Gates Rubber Co.**, Denver, Colo., \$385,172, aircraft hose.

**Jack & Heintz Precision Industries**, Cleveland, \$635,905, starters.

**Linde Air Products Div.**, Union Carbide & Carbon, New York, \$334,951, breathing oxygen.

**General Electric Co.**, Syracuse, N. Y., \$365,750, major components for radio set; \$249,147, generators (Schenectady).

**Sundstrand Machine Tool Co.**, Rockford, Ill., \$310,000, constant speed drives.

**Mirax Chemical Products Corp.**, St. Louis, Mo., \$216,534, metal shipping containers.

**Westinghouse Electric Co.**, Dayton, O., \$209,075, transformers.

**United Mfg. Co.**, Chicago, \$200,970, soft zinc coated steel wire.

**Metal Hose & Tubing Co.**, Dover, N. J., \$218,585, non-metallic gasoline hose.

**Elastic Stop Nut Corp. of America**, Union, N. J., \$141,433 and \$184,192, aircraft hardware.

**Fire Div., Cardox Corp.**, Monee, Ill., \$193,139, ferrying container.

**Miller Steel Co.**, Kokomo, Ind., \$171,516, low carbon hot rolled sheet.

**Whitting Corp.**, Harvey, Ill., \$112,102, nacelle stand assemblies.

**Eclipse-Pioneer Div., Bendix Aviation**, Teterboro, N. J., \$172,923, fuel flow type transmitters.

**Magnavox Co.**, Ft Wayne, Ind., \$123,014, bomb arming control assembly.

**Aluminum Co. of America**, Washington, D. C., \$102,136, aluminum sheet.